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# “The Stove Trade Needs Change Continually”:<sup>1</sup>

Designing the First Mass-Market Consumer Durable,  
ca. 1810–1930

*Howell John Harris*

*Cast-iron stoves for heating and cooking became ubiquitous features of the American home by the middle of the nineteenth century and remained an important domestic technology into the early twentieth. Their makers invested a great deal of effort into the design of their goods, whose consumers expected stoves to be both visually attractive and useful. There was an enormous variety of stove models and increasingly rapid superficial change but also technological convergence and stylistic consensus. The article explores this apparent paradox and explains it by focusing on the comparatively few men who designed most American stoves in the industry’s heyday.*

**I**N 1861, Jeremiah Dwyer (b. 1837), an ambitious young iron molder and labor activist, acquired a small foundry in Detroit in partnership with his brother James (b. 1842), also a journeyman molder, and with one of the business’s previous owners. They were the city’s first specialized stove makers, laying the foundations of what quickly would become one of Detroit’s leading industries until overtaken by automobile manufacturing in the mid-1900s. At first their scale of operations was tiny: the

brothers built one stove per day and sold them directly to local customers. But they began to thrive after securing the backing of a local hardware merchant and military contractor, William Tefft (b. 1819), who bought everything they could make to help satisfy the huge demand for stoves during the Civil War boom. Tefft soon bought out the Dwyers’ partner, too, and together with another local merchant, Merrill Mills (also b. 1819), transformed the proprietary firm into a joint-stock company in 1864. This was incorporated as the Detroit Stove Works in 1866, with a capitalization of \$100,000, half of it paid in at the outset. The new enterprise united the Dwyer brothers’ practical experience and managerial skills with the marketing abilities and deep pockets of their senior partners, who put up four-fifths of the capital and whose families kept a controlling interest in the company for decades thereafter.<sup>2</sup>

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Research for this article would have been impossible but for the work of librarians and archivists, notably at the Detroit Public Library, Historical Society of Pennsylvania, Rensselaer Polytechnic Institute, Winterthur Library, and particularly the New York State Library and the Hagley Library. They have all collected and preserved an abundance of material on the stove industry despite the lack of evidence that any users would ever find it remotely interesting. Hagley also provided financial support for research in its collections and organized the conference “Commonplace Yet Extraordinary” on the history of industrial design, in May 2008, for which the first version of this article was written.

<sup>1</sup> Testimony of Esek Bussey, stove manufacturer, Troy, NY, July 16, 1894, *In the Circuit Court of the United States for the Eastern District of Wisconsin. The Michigan Stove Company against the Fuller, Warren Company. Testimony for the Defendant* (Troy, NY: O. A. Green, 1894), 36 (hereafter cited as *Troy Patent Testimony*).

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<sup>2</sup> Robert B. Ross and George B. Catlin, revised by Clarence M. Burton, *Landmarks of Detroit: A History of the City* (Detroit: Evening News Association, 1898), 640–41, 696–98, 779; Clarence M. Burton, William Stocking, and Gordon K. Miller, eds., *The City of Detroit, Michigan, 1701–1922*, 5 vols. (Detroit: S. J. Clarke Publishing Co., 1922), 1:546; Federal Writers’ Project, *Michigan: A Guide to the Wolverine State* (New York: Oxford University Press, 1949), 267; Detroit Stove Works Minute Book, Records of the Detroit-Michigan Stove Co., Burton Historical Collections, Detroit Public Library.

The Detroit Stove Works immediately began a process of continuous investment, on which would depend its rapid advance to become one of the largest companies in the industry. To succeed, Detroit Stove had to claim a growing share of an already crowded market and draw retailers' and consumers' attention away from the old, established New York state firms that had dominated the Midwestern trade until then. The way it aimed to do this was by spending heavily from day one and going straight to the nation's most experienced and prolific stove pattern maker, Nicholas Vedder (b. 1820), of Troy, New York, to provide it with a competitive, up-to-the-minute product line right from the outset. The patterns he sold to the company were both the most important tools of the stove molder's trade, vital to the production of high-quality castings, and also the physical embodiments of the intellectual property Vedder had created in his innovative, patent-protected stove designs.

The young company's key strategic priority was deciding on the patterns to buy or commission, from Vedder and other sources. In the beginning, William Tefft, now its president, and works manager Jeremiah Dwyer shared the responsibility. But the entire board soon entered into careful, extensively minuted discussions of even small design details, with a degree of attention that they rarely devoted to anything else. This was surely because getting the product line right was crucial to everything else and patterns represented such a large outlay: in 1866, \$9,955 of the corporation's assets—more than half of its fixed capital—as against just \$2,547 for its machinery and other tools. They made up \$16,600 (almost half) of the additions to equipment in the first full year. By the time of its third annual report, the Detroit Stove Works' investment in patterns equaled its buildings, machinery, and tools in value. This situation changed little thereafter in this skill-intensive, relatively unmechanized business. Year in, year out, in booms and recessions alike, Detroit Stove spent heavily to build up and maintain an ever-changing and widening range of cooking and heating stoves to suit the varied needs of its demanding customers. This was not a matter of choice, because all of its competitors were doing the same; indeed, they had been doing so for decades.<sup>3</sup>

<sup>3</sup> For pattern buying, see *Detroit Stove Works Minute Book*, April 25, 1866, 9; March 20, 1867, 30; April 18, 1867, 32; February 15, 1868, 53–56; February 25, 1869, 79; March 18, 1870, 112–13; March 8, 1871, 142–43; for pattern account, see July 7, 1866, 13; January 12, 1868, 48; July 17, 1868, 61; July 30, 1869, 94; and January 1, 1888, 302. "Detroit Stove Works—Largest Establishment in the City" (*Detroit Commercial Bulletin*, July 20, 1871, [http://www.](http://www.myantiquestove.com/history/detroit-stove-works-largest)

The story of the Detroit Stove Works' beginnings highlights the importance of product design, represented in the costly wood and iron offspring of the pattern maker's agile mind and dexterous hand, to entrepreneurial success in the stove trade. Stovemaking was a pioneer among the emerging consumer durables industries and already a mature trade by the time the Dwyers determined to cross the thin line separating its artisans from its entrepreneurs. Stoves were the most significant new domestic technology before the introduction of gas and electricity to the American home and some of the costliest, as well as most commonplace, household objects of the age. Demand and production surged through the industry's first forty years, manufacturers multiplied, and their products evolved rapidly in a process of intensely competitive invention and imitation. Stoves were at one and the same time objects of utility and of decoration, and manufacturers worked hard at developing their products along both dimensions to satisfy consumers' diverse and increasingly exacting requirements. They penetrated a majority of non-Southern homes between the industry's origins in the 1820s and 1830s and the Civil War and flooded into the South, the trade's last frontier, once the war was over. Over a million units were made and sold in 1860, more than two million by 1870—one new stove for every nineteen American people or every fourth household.<sup>4</sup>

This was an industry where design was critically important, both to perfect the product and help boost demand and in order to assist makers in mitigating the rigors of the market that they created. For the latter purpose, they became unusually dependent on the patent system—at first just for "improvements" but after 1842, when the law began to permit it, for designs, too. Stoves made up about a tenth of all U.S. invention patents in the late 1830s and mid-1840s, the industry's first two growth peaks, and about 70 percent of design patents in the new dispensation's first couple of decades. Inventors, pattern makers, and manufacturers devised, traded in, and vigorously defended intellectual property rights

[myantiquestove.com/history/detroit-stove-works-largest](http://www.myantiquestove.com/history/detroit-stove-works-largest)) describes the company's new factory built to accommodate its rapid growth, including its "sanctum," the small pattern shop, where, the author incorrectly claimed, "all the new styles of stoves so frequently introduced by the Detroit Stove Works Company, have been invented," airbrushing Vedder and less celebrated suppliers out of the picture in order to establish the company's claim to creative originality.

<sup>4</sup> Howell J. Harris, "Conquering Winter: U.S. Consumers and the Cast-Iron Stove," *Building Research and Information* 36, no. 4 (July 2008): 337–50, and "Inventing the U.S. Stove Industry, c. 1815–1875: Making and Selling the First Universal Consumer Durable," *Business History Review* 82, no. 4 (Winter 2008): 701–33.

in design features that, they thought, offered them a temporary shelter from competition, a way of seeking and protecting market share without having to resort to price cutting, and an additional source of revenue.

This essay traces the ways in which design innovation and patenting for both functional improvements and decorative features and styles operated in what was, first of all, a rapidly growing industry between the late 1830s and Reconstruction and then a mature, often glutted market thereafter. It also exploits correspondence among consumers, distributors, and manufacturers to illuminate that other driver of the design process—articulate feedback from the market itself. This essay will explain why an unceasing search for product differentiation in a competitive and imitative industry, and the pressures on individual manufacturers to satisfy a common set of consumer expectations, resulted in a situation where any one stove was in all essentials, and even in superficial appearance, much like any other.

#### Form Follows Function: The Evolution of the American Stove

The nineteenth century cast-iron stove for cooking and space heating was a product that assumed a recognizably mature form between the late 1830s and the early 1850s, at the same time that a specialized industry dedicated to its manufacture emerged. The midcentury stove was a development from three colonial and early national Pennsylvania stove types: the six plate (for room heating), ten plate (for heating and cooking), and the celebrated but impractical and commercially unsuccessful Franklin stove and its simplified, more salable successors—initially intended just for room heating but later adapted for cooking, too (fig. 1). Unlike the humble cannon stove, for heating public spaces, and later hot-air furnaces, hidden away in the basement, the principal members of the stove family were never purely utilitarian objects. They had to take their place in the parlors, and later the kitchens, of the predominantly wealthy households who were the early adopters of this new and initially costly technology. So their makers strove to transform these heavy, bulky, black objects into acceptable items of furniture.

For this purpose stove makers relied on cast iron's ease of decoration. Any design that could be carved or fixed upon the wooden boards from which stove-plate patterns were made would translate itself into low relief on the finished casting's outer surface. Simple decoration also served a functional purpose:



Fig. 1. Henry Schreiner, ten-plate “New Orleans Victory” stove, Philadelphia, ca. 1816–25. Cast iron; L. 30”, W. 13  $\frac{3}{8}$ ”, H. 31  $\frac{1}{2}$ ”. (Old Sturbridge Village, Sturbridge, MA; photo, Thomas Neill.)

it disguised some of the imperfections unavoidable when casting stove plate in the sand or dirt floors of the country blast furnaces that produced it from the colonial period until the 1830s. Stove pattern makers selected from a limited palette of familiar floral, naturalistic, or patriotic decorative motifs and added makers’ or furnace names and dates as permanent advertisements to craft everyday objects for prosperous federal-era households up and down the East Coast from Baltimore to Maine (figs. 2–3).<sup>5</sup>

<sup>5</sup> Edwin A. Barber, “American Iron Work of the Eighteenth Century,” *Bulletin of the Pennsylvania Museum* 10, no. 40 (October 1912): 59–62; Henry C. Mercer, *The Bible in Iron; or, the Pictured Stoves and Stove Plates of the Pennsylvania Germans* (Doylestown, PA: Bucks County Historical Society, 1914); William J. Keep, “History of Heating Apparatus” (unpublished manuscript, Baker Library, Harvard Business School, Cambridge, MA, 1916), esp. 35, 37, 40–41, 44, 47–57; Samuel Y. Edgerton, “Heating Stoves in Eighteenth-Century Philadelphia,” *Bulletin of the Association for Preservation Technology* 3, nos. 2–3 (1971): 15–104, for the most thorough treatment; Josephine H. Peirce, *Fire on the Hearth: The Evolution and Romance of the Heating-Stove* (Springfield, MA: Pond-Ekberg Co., 1951), esp. pt. 2, copiously illustrated; Patricia J. Brewer, *From Fireplace to Cookstove: Technology and the Domestic Ideal in America* (Syracuse, NY: Syracuse University Press, 2000), esp. chaps. 3–6.





Fig. 2. Detail of bill head from Robert Wellford, Philadelphia, to Samuel G. Wright, April 14, 1820. Accession 1665, folder 3, box 9, Samuel G. Wright Papers, Hagley Museum and Library, Greenville, DE (Hagley Museum and Library.)

Stoves began to evolve from the traditional types in the early 1800s and particularly after the end of the War of 1812. The best historical evidence for this, apart from surviving stoves themselves, is provided by the U.S. Patent Office record. A trickle of stove patents turned into a steady stream in the 1830s, with inventors, designers, and makers concentrating their efforts on increasing stoves' usefulness as heating and particularly as cooking devices and on constructing and perfecting stoves to use the

new wonder fuel of the urban East Coast, Pennsylvania anthracite (fig. 4).<sup>6</sup>

At this time, makers, sellers, and users seem to have valued stoves' functionality much more than their appearance. Advertisements and reports focused on utilitarian features, with looks distinctly secondary. Patent drawings, particularly for cooking stoves, were generally unadorned or displayed a few applied decorative motifs on otherwise plain surfaces (fig. 5). Forty years later the editor of the *Metal Worker*, an informed commentator, described them as "so utterly devoid of ornament that they were little more than cast or sheet iron boxes."<sup>7</sup> But appearance was not altogether neglected. The Reverend Doctor Eliphalet Nott, principal of Union

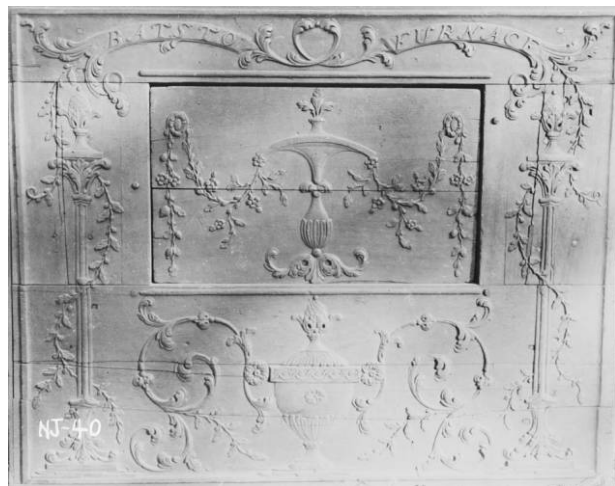


Fig. 3. Atsion Stove, pattern for stove casting, Batsto Furnace, Burlington Co., NJ. (Historic American Buildings Survey, NJ-40, reproduction no. HABS NJ,3-BATO,7-, Prints and Photographs Division, Library of Congress; photo, Nathaniel R. Ewan.)

<sup>6</sup> A database of all of the approximately 20,000 records of U.S. invention and design patents for cooking and heating appliances, designs, and accessories, 1790–1920, underpins this essay. Fields include patent numbers, types, detailed classifications, and (for 1790 through 1873) names, patentees' names, and their places of residence. All patents can be viewed online. The U.S. Patent and Trademarks Office (<http://patft.uspto.gov/>), which is the source for all patent drawings and documents cited subsequently in this essay, enables one to search by patent number and view/download high-quality TIFF images. X-type (pre-1836) patent numbers must be entered in the format X1234, though the X is the final character in the original version, by which they are cited in this essay. Google Patents (<http://www.google.com/patents>) allows keyword searching and online viewing or PDF downloads.

<sup>7</sup> James C. Bayles, editor, "Art in Manufactures," *Metal Worker* (hereafter *MW*) 3, no. 18 (May 1, 1875): 4. See, e.g., Nichodemus Lloyd (Philadelphia), "Stove" (1812), patent 1676X, or Josiah W. and Eli Kirk (Philadelphia), "Heating and Cooking Stove" (1833), patent 7735X—showing little technical or stylistic development in a generation.

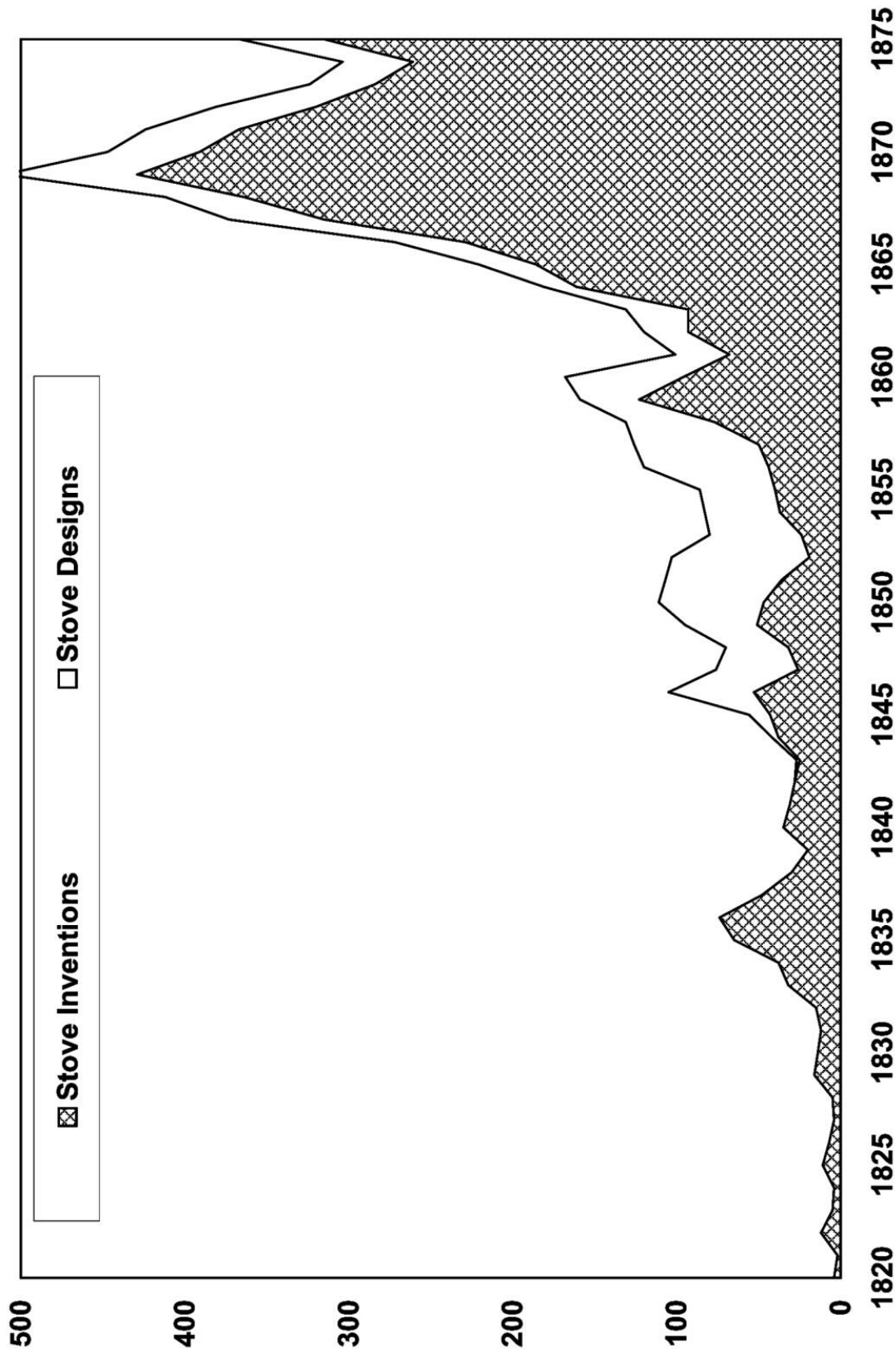


Fig. 4. Stove patents, 1820-75: "improvements" (inventions) and designs (1843-).



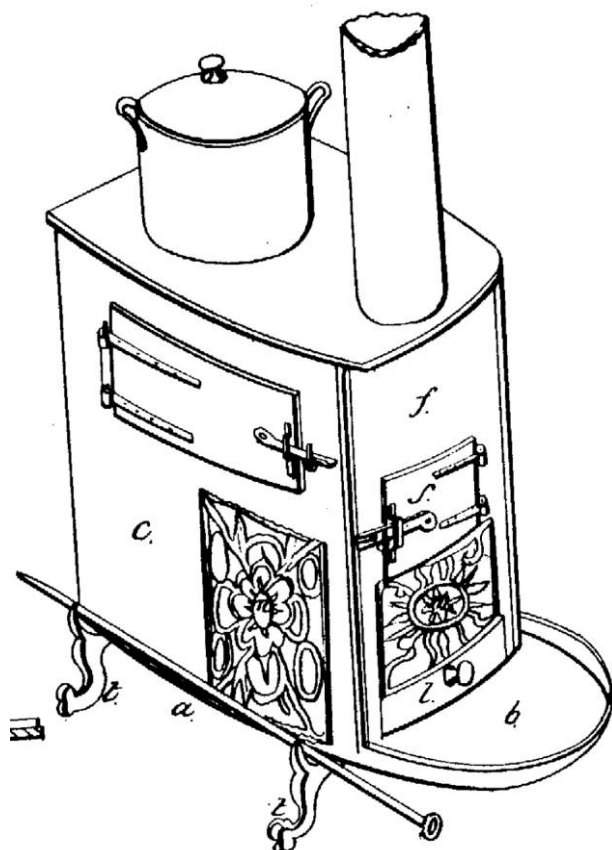


Fig. 5. Detail of patent drawing for P. Benedict, "Cook-stove," patent 9193X, Lancaster, PA, 1835. (U.S. Patent and Trademark Office.)

College, Schenectady, New York, and the Rensselaer Institute, Troy, New York, a pioneer in devising and constructing efficient anthracite stoves, was in 1833 still agnostic about his products' appearance—they "may present any external form though some regular architectural form is preferred." But in practice Nott's stoves were clad in a fashionable ecclesiastical gothic style to appeal to their intended upscale purchasers (fig. 6). And in 1835 the awards committee at the First Annual Fair of the New York Mechanics' Institute commended stove makers for their "beautiful" or "very handsome" or "very neat" products, as well as for their serviceability.<sup>8</sup>

New York's fair was an early example of what soon became an important mid-nineteenth-century institution. Fairs and expositions blended entertainment, instruction, and marketing. New products

<sup>8</sup> For the first quote, see "Magazine Stove" (1833), patent 7643X; also see "Anthracite-Coal Stove" (1833), patent 7636X. "First Annual Fair of the Mechanics Institute," *Mechanics' Magazine, and Register of Inventions and Improvements* 6, no. 5 (November 1835): 249–64, quotation from 263.

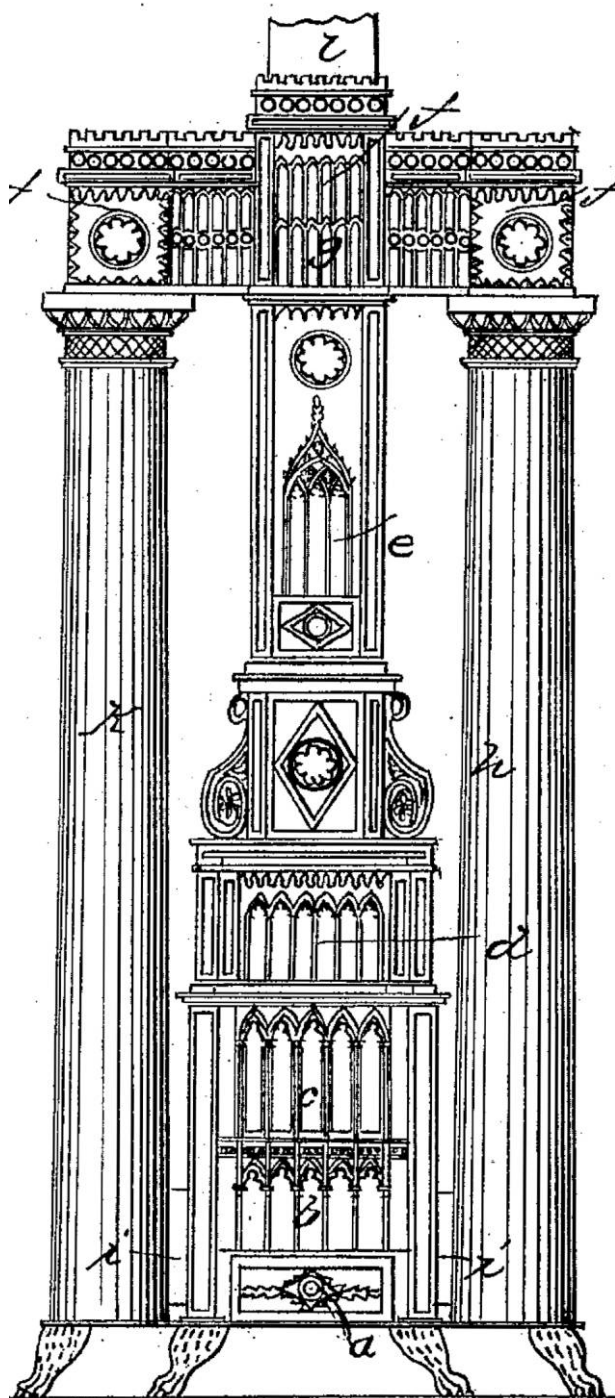


Fig. 6. Detail of patent drawing for Eliphalet Nott, "Magazine Stove," patent 1260, Albany, NY, 1839. (U.S. Patent and Trademark Office.)

were displayed and sold, prizes offered, and consumers educated about what was new, what was best, and what they ought to demand from among the large and rapidly increasing numbers of novel, untested goods, all competing for their attention and

their cash. Fairs, and also the emerging technical press, notably the journal of Philadelphia's Franklin Institute and later the *Scientific American*, played a large role in constructing a market and increasing the pressures of emulation affecting stove makers' behavior in product development.

### The Transformation of Stove Manufacturing in the 1830s

There were other significant changes taking place within the stove industry itself at this time that would have major implications for the products' appearance and would increase the care that manufacturers devoted to design issues. The most important developments were the industry's restructuring and relocation and the beginning of its rapid growth. Briefly, through the early to mid 1830s, stove-plate casting remained tied to rural blast furnaces, particularly those of southeastern Pennsylvania and southern New Jersey. Stove assembly, distribution, and marketing meanwhile relied on "manufacturers" and dealers quartered in commercial cities and towns along the eastern seaboard from Baltimore northward and on navigable waterways stretching deep into the interior.

After the mid 1830s, several things began to happen in rapid sequence. First of all, major urban dealers increasingly commissioned their own designs, rather than just buying stoves cast from the furnaces' own patterns. They thereby raised the rate of innovation and the likelihood of a rapid response to signals from an increasingly experienced, demanding, and competitive market. Next, the dealers began to integrate backward into stove-plate casting too, bringing the entire design and manufacturing process onto one site under unified proprietary control and producing agglomerations of specialized stove foundries in Baltimore, Philadelphia, New York City, Boston, and, in particular, Albany and Troy, New York, at the head of tidal navigation on the Hudson River and the eastern terminus of the Erie Canal. These foundries also began to develop improved techniques for the production of cheaper, lighter, more durable, and more attractive goods through a transformative process of "learning by doing," during which they also developed their own skilled, specialized labor force.<sup>9</sup>

The principal identifiable pioneer was Jordan Mott, a stove dealer-turned-manufacturer of New York City, who perfected in the 1830s "a light,

smooth, sharp cut, and elegant style of stove plate in place of the rough castings of the blast furnace previously used. By studying the effects of irregular expansion by heat he was able to overcome the tendency to strain and crack by a change in the form of the plates, that is by panelling, curving, or fluting them."<sup>10</sup> Mott's aim was to make a cheaper and better-quality product, permitting him to realize his ambitions for his stoves as mass-, rather than niche-market, goods. For him, "ornament [was] merely a thing of fancy, or taste," but his and others' innovations in design and manufacturing technique over the next decade would also enable stove founders to batch-produce stoves that were more visually attractive as well as more functional and affordable than before.<sup>11</sup> The best evidence of this is provided by surviving artifacts themselves, especially heating stoves destined for the middle-class parlor. Between the early 1830s and the mid 1840s, the widespread adoption of Mott's and others' innovations encouraged designers to cover their products with a plethora of classical, ecclesiastical gothic, romantic, and other motifs from architects' and woodcarvers' pattern books.

Several key technical developments facilitated this stylistic change. The use of the cupola furnace for melting pig iron and scrap produced a hotter, cleaner, more fluid metal, improving surface finish and the ability to faithfully reproduce fine detail.<sup>12</sup> The replacement of open sand by flask casting permitted more elaborately decorated surfaces, greater variations in contour and shape, and movement away from the slab-sided aesthetic of traditional stove plate (fig. 7).<sup>13</sup> Finally, there was a radical transformation in patternmaking practice. The dominant style of the 1800s–1820s relied on building up patterns on flat boards by pinning or gluing

<sup>10</sup> J. Leander Bishop, *A History of American Manufactures from 1608 to 1860*, 3 vols. (Philadelphia: Edward Young, 1868), 2:498. These innovations are explained in Jordan Mott's copiously illustrated *Description and Design of Mott's Patented Articles, Secured by 27 Patents* (New York: Daniel Adey, 1841), one of the earliest surviving stove catalogs.

<sup>11</sup> "Stove and Fireplace," patent 50 (1836). Several of Mott's other patents demonstrate his preference for, and ability to produce, clean, classical lines—e.g., "Magazine Stove," patent 7910X (1833), and "Heating Stove," patents 8983X and 8984X (1835).

<sup>12</sup> "Improved Cupola for Melting Iron Constructed by Messrs. Franklin Townsend, & Co., Albany, N.Y.," *Civil Engineer and Architect's Journal, Scientific and Railway Gazette* 9 (April 1846): 121–22; Fredrick Overman, *The Manufacture of Iron, in all its various branches* (Philadelphia: Henry C. Baird, 1850), 201.

<sup>13</sup> John D. Tyler, "Technological Development: Agent of Change in Style and Form of Domestic Iron Castings," in *Technological Innovation and the Decorative Arts*, ed. Ian M. G. Quimby and Polly Anne Earl (Charlottesville: University of Virginia Press, 1974), 151, 157, 158, and esp. 161.

<sup>9</sup> Harris, "Inventing the U.S. Stove Industry."





Fig. 7. Detail of watercolor sketch, Delaware Furnace “oven Franklin” cookstove, showing oven doors decorated with sheaves of wheat, 1836. Folder 9, box 7, Samuel G. Wright Papers, Hagley Museum and Library. (Hagley Museum and Library.)

plaster of paris or cast-lead decorative features to them. Wooden patterns of the 1830s and after were carved instead from the solid or assembled from many thin layers of wood glued together and then carved, which permitted much greater variation of contour in the finished object and allowed designers much more decorative freedom (fig. 8). The development of metal in place of wooden patterns for production use also enabled more accurate reproduction of detail and large-batch manufacture.<sup>14</sup> The result was “an era of ornament [when] it seemed

that the object of the stove was to show the ingenuity of the carver employed by the pattern maker. If anything grotesque could be devised, the stove was sure to have it.”<sup>15</sup>

<sup>14</sup> Mark Reinberger, *Utility and Beauty: Robert Wellford and Composition Ornament in America* (Newark: University of Delaware Press, 2004), esp. 22, 24, 43–45, describes the work of the leading Philadelphia pattern maker of the 1800s to the early 1820s. The techniques of Wellford and his few competitors—similar to the more sophisticated British methods of the time—are explained in John Holland, *A Treatise on the Progressive Improvement and Present State of the Manufactures in Metal*, vol. 2, *Iron and Steel* (London: Longman, Rees, Orme, Brown, Green & Longman, 1833), esp. 183–85. For

stove patternmaking, see International Correspondence Schools, *Reference Library, Sections 35–39: Patternmaking* (Scranton, PA: International Textbook Co., 1905), pt. 5—the best account of the industry’s mature techniques. For metal patterns, see, e.g., Ezra Ripley (Troy, NY), “Improvement in the Method of Making Patterns for Casting Hollow Ware and Other Articles of Metal,” patent 3724 (1844)—its “peculiar advantages” were “facility and cheapness.” This was the first of a number of Capital District patents for molding techniques and equipment aiming at accurate, economical repetition production.

<sup>15</sup> Pattern makers were recruited from the ranks of the most highly skilled carpenters and cabinetmakers—for example, Erastus Palmer (b. 1817), one of the most celebrated American sculptors of his generation, started out as a Utica, NY, carpenter and stove pattern maker; Henry T. Tuckerman, “The Sculptor of Albany,” *Putnam’s Monthly Magazine* 7, no. 40 (April 1856): 394–400. See Bayles, “Art in Manufactures,” 4, for the snifty quote.



Fig. 8. Pattern maker “backing out” a stove leg. From International Correspondence Schools, *Reference Library, Sections 35–39: Patternmaking*, pt. 5 (Scranton, PA: International Textbook Co., 1905), 32. (Hagley Museum and Library.)

### The Era of Ornament

Stoves developed rapidly from being just bolted-together collections of flat cast-iron plates with some surface decoration to include hollow and/or rounded functional and decorative elements, all of them slathered with carving. At the top of the price range, the columnar parlor stoves popular in the 1830s and 1840s were the ultimate expression of the unprecedented design freedom offered by the combination of new patternmaking and foundry techniques (fig. 9). The first stove design patent—Ezra Ripley’s D5 of 1843—was for a column flue made to look like a dolphin (of a rather fishy character; it had scales). Ripley emphasized that his flue could be molded “in one piece including the base, the shaft and the capital,” rather than

needing to be built up; a considerable saving, as well as being aesthetically much neater and less likely to leak smoke into the room through the joints between plates. Column stoves adopted a confident new look all their own, dominating as well as efficiently heating their owners’ finest rooms with vast lumps of polished iron in a bewilderingly eclectic variety of styles—including floral, rococo, and “Egyptian,” as well as all of those already mentioned, sometimes curiously intermixed on the same proud object. Now, at last, the stove could compete with the open fire and its elaborate mantel as a suitable centerpiece for the living spaces of the middle and upper classes (fig. 10). The industry’s increasingly efficient techniques of large-batch manufacture quickly permitted the democratization of this new fashion, making cheaper and simplified





Fig. 9. Elisha N. Pratt and Co., rococo revival column stove, Albany, NY, 1844. Cast iron; H. 57  $\frac{1}{4}$ ", W. 34  $\frac{1}{2}$ ", D. 17  $\frac{1}{4}$ ". (Winterthur, gift of Wunsch Americana Foundation.)

versions of the parlor stove accessible to a mass market (fig. 11).<sup>16</sup>

The results of all this creative endeavor were commercially successful but not universally respected by would-be arbiters of midcentury taste. George Wallis, principal of the Birmingham (England) College of Design and a specialist in the application of the decorative arts to industry, gave a mixed verdict on the products of the U.S. foundry trade in his celebrated 1854 report on the New York Industrial Exhibition. Quality was high: products were "admirable, alike for the purity of surface in the material, and the skill shown in the moulding. The iron . . . is of a firm quality and closer grain . . . than that used

for similar work in England. Hence the castings produced are sharp in detail and even in surface, and require a very small amount of dressing or filing to complete them." But stoves were singled out for particular condemnation because of their looks: though designs were sometimes appropriate, there was "a wide field for a better style than as yet prevails, . . . the ornamentation adopted often partakes of the character of an excrescence rather than of a decorative adjunct." Stoves shared the general failure Wallis perceived in the design of American consumer products—they were derivative and tasteless, full of "errors committed in a vague seeking after novelty." What Wallis especially disliked was what consumers evidently wanted, or what designers and makers thought that they wanted: a design aesthetic supposedly at odds with the material of which stoves and other decorative cast-iron products were manufactured, "suggesting any other material than that of which the article is really composed." Wallis was not as severe as other contemporary critics: the conservative Southern intellectual George Fitzhugh found stoves' "alto-relievo casting . . . ugly and contemptible." But, fortunately for the industry's prospects, its hundreds of thousands of customers did not seem to share this lofty disdain for its ability to bring the benefits of mass production to the household while catering to common tastes (or the absence of "taste") with its cast-iron versions of carpenter gothic (or baroque, classical, Egyptian, or rococo).<sup>17</sup>

When stove designers attempted to describe their work in patent applications, words understandably failed them quite often—there was no language adequate for their stylistic inventiveness, and favored adjectives like "bold" or "fancy" did not get them very far, however frequently repeated.<sup>18</sup> For example, what is one to make of William Abendroth's (Port Chester, New York) 1858 cookstove design D1044? It was "of rather a notional character and is intended to excite some degree of interest as well as to present an ornamental appearance" with its exuberant display of scrolls, flowers, "the head of an Indian ornamented with

<sup>16</sup> Tammis K. Groat, *Cast with Style: Nineteenth-Century Cast-Iron Stoves from the Albany Area* (Albany, NY: Albany Institute of History and Art, 1984), 35–69, provides abundant illustrations of the elaboration of design and surface decoration, including Ripley's dolphin flues, 57.

<sup>17</sup> George Wallis, *New York Industrial Exhibition. Special Report of Mr. George Wallis*, House of Commons Command Paper no. 1717 (London: Harrison & Son, 1854), 42, 43, 67; George Fitzhugh, "Ancient and Modern Art and Literature," *DeBow's Review* 28, no. 1 (July 1860): 80–87. Ellen M. Snyder, "Victory over Nature: Victorian Cast-Iron Seating Furniture," *Winterthur Portfolio* 20 (1985): 221–42, explores a similar product, in which Jordan Mott also specialized and which Wallis also condemned as aesthetically absurd, 41.

<sup>18</sup> See, e.g., Ezra Ripley's very floral design patent D25 (1844), stove made to look like a Gothic cottage, D41 (1845), or abstract, geometrical D87 (1846)—both "bold" and "fancy."



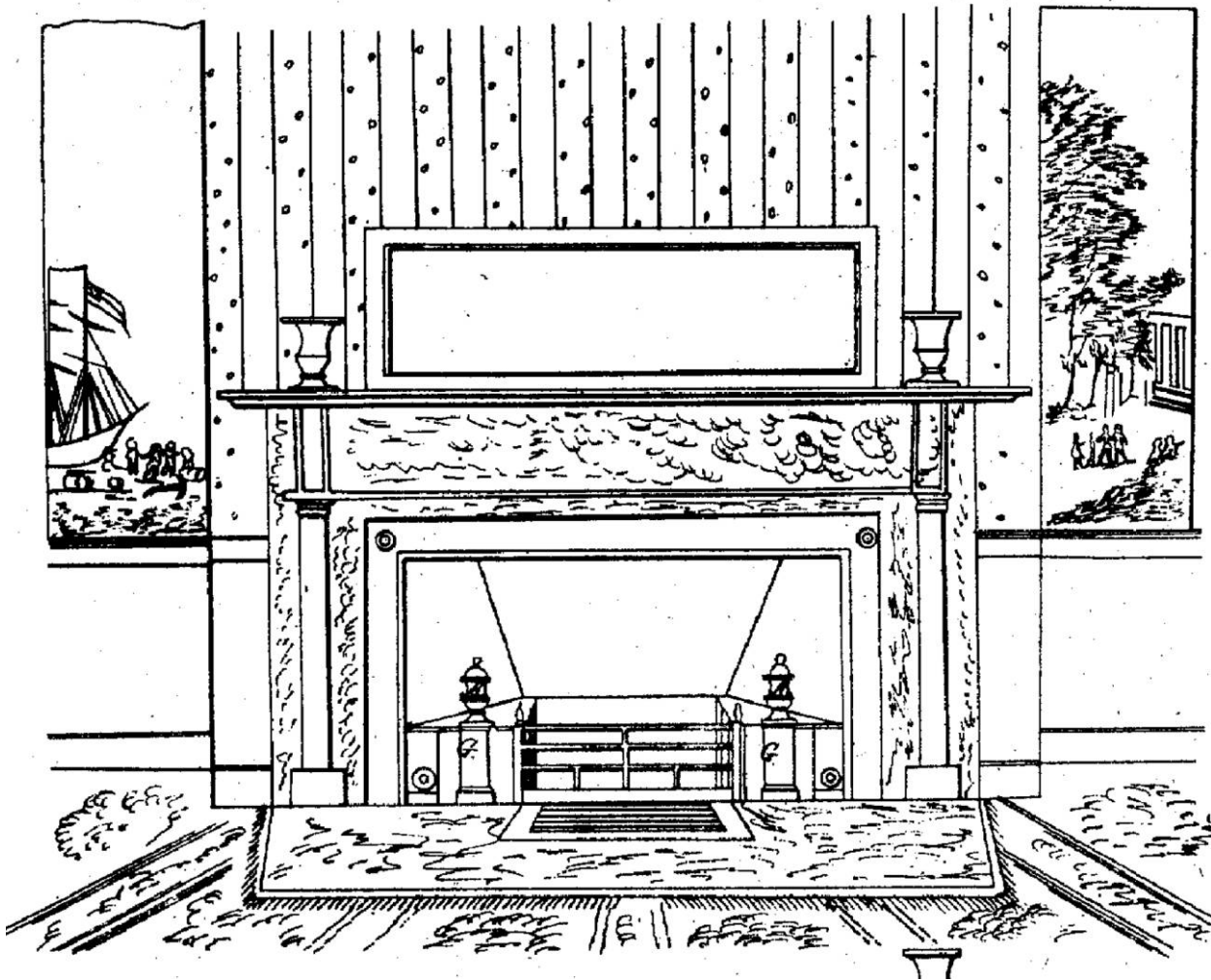


Fig. 10. Patent drawing for Charles Lane, "Fire-Place and Grate," patent 9288X, Hingham, MA, 1835. (U.S. Patent and Trademark Office.)

feathers," and "the feat of General Pitman."<sup>19</sup> "On one panel . . . the General on horse back is represented as being pursued by the British dragoons, and on the . . . opposite side . . . the General is descending on horse back the stone steps on the hill side at a rapid speed." Abendroth was perhaps a little defensive about the result—"The several scrolls although differing somewhat in form still harmonize with each other and in connection with the other named parts form a chaste and ornamental design for a cook stove." Wallis, Fitzhugh, and other aesthetic snobs would probably not have been impressed by Abendroth's ideas of harmony and chastity, but they were not the target buyers for

stoves like his, which were the cast-iron equivalents of Currier & Ives prints for the kitchen, covered with sentimental, historical, and patriotic genre scenes (figs. 12–14).

#### The Stove Industry and the Patent System

Patent records also provide a different kind of evidence of this process of design evolution. They reflect the work of a growing community of stove makers, well aware of one another's experiments because most of them lived and traded in the same few urban centers and also because of the role that the emerging technical press and trade fairs played in the dissemination of information among them. These men were in equal measures very competitive with and highly imitative of one another.

<sup>19</sup> General Pitman's identity is unknown; presumably he was a hero of the Revolutionary War or the War of 1812, whose exploit Abendroth evidently expected to be familiar to his buyers.



Fig. 11. Henry N. Stanley's Patent no. 8 parlor stove, patent D40, Poultney, VT, 1845. Cast iron; H. 31  $\frac{1}{8}$ ", W. 19  $\frac{1}{2}$ ". (Winterthur.)

A more or less original design—Henry Stanley's rotary-top cooking stove of 1832 (patent 7333X) or Philo Stewart's Summer and Winter Airtight Cooking Stove of 1838 (patent 915)—that turned into a successful new product was a rarity. Most inventors contented themselves instead with minor modifications of or improvements on existing designs and addressed a common set of functional problems bedeviling all stove makers and users. In cookstoves, which absorbed the lion's share of inventive effort, these included enlarging the size of the oven, equalizing heat distribution within it, increasing the cooking surface on top, improving controllability and fuel economy, and adding such useful extras as warming closets or water boilers utilizing what would otherwise have been waste heat.<sup>20</sup>

What mattered was to be able to claim just enough usefulness, novelty, and distinctiveness to persuade a patent examiner to confer an intellectual property right and a court to compel others to respect it. The resulting microinventions were nevertheless highly valued by those who created

them. When inventor-manufacturers turned their ideas into a merchantable stove, the patent claim translated directly into a unique sales proposition, distinguishing it from the host of rival products in the market, adding value, and protecting its maker from head-to-head competition on price alone. When they sold or licensed their intellectual property to another maker as a right to manufacture and sell within a particular market, the patent served a similar purpose for the buyer as for the original inventor, as well as creating an additional source of revenue for the latter by way of royalty payments.

The emerging stove industry became habituated to this approach to the commodification of "improvements" almost from its beginning. Daniel Pettibone, an itinerant Yankee inventor, had pointed the way during the presidencies of Jefferson and Madison when he patented the first practicable warm-air heating furnace for public buildings. The Pennsylvania Hospital, Almshouse, and House of Employment, the Philadelphia Bank, and eventually the White House and Capitol all had Pettibone furnaces. He used elite endorsements to promote sales and the patent system to add further to his novel appliances' credibility, as well as securing his monopoly in their manufacture.<sup>21</sup> Other leading stove inventors of the teens, 1820s, and 1830s followed the trail he had blazed as they developed their products for the kitchen and parlor and joined the march toward the national mass market and away from the lofty urban and institutional niches where Pettibone had sought his profits.

### The Golden Age of the Design Patent

In 1842, Congress amended the patent law in a way that was uniquely favorable to stove makers, who rapidly seized on this opportunity. The close fit between the law's provisions and stove makers' existing business practices and needs was probably

<sup>21</sup> Daniel Pettibone, *Description of the Improvements of the Rarefying Air-Stove, for Warming and Ventilating Hospitals, Churches, Colleges, Dwellinghouses, Hot or Greenhouses, Manufactories, Banks, Barracks, Ships, &c. &c. For which Letters-Patent have been obtained from the Government of the United States of America* (Philadelphia: self-published, 1810), and *Pettibone's Economy of Fuel* (Philadelphia: Abel Dickinson, 1812). Pettibone's patents of 1808 ("Fire Place"), 947X, and especially 1812 ("Rarefied Air Stove"), 1731X, repeat much of the text in his promotional pamphlets. John M. Bryant, *Robert Mills* (Princeton, NJ: Princeton Architectural Press, 2001), esp. 121–22, 126, details the way in which installations of Pettibone's inventions spread through the seaboard cities from Washington north as a result of the patronage of leading architects, like Benjamin Latrobe and Mills himself, who promoted them and licensed the technology.

<sup>20</sup> Keep, *History of Heating Apparatus*, chap. 6.



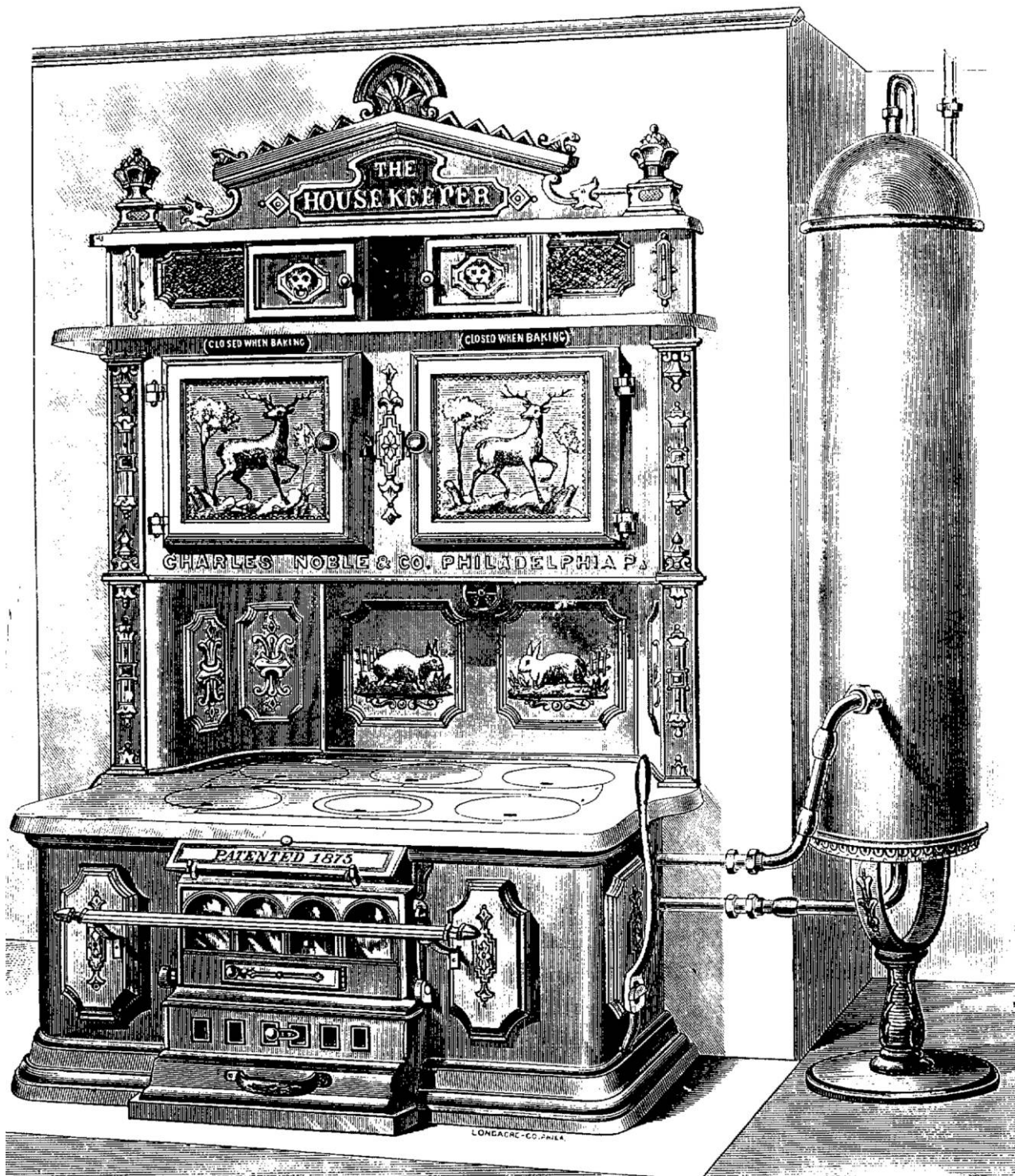


Fig. 12. Patent drawing for Nicholas S. Vedder and Tobias S. Heister, "Plates of Ranges" showing the complete range (assigned to Charles Noble and Co., Philadelphia), patent D8393, Troy, NY, 1875. (U.S. Patent and Trademark Office.)





Fig. 13. "Happy Home" cookstove. From Buckwalter and Co., *Continental Stove Works* catalog (Royersford, PA: Buckwalter, 1885), 45. (Hagley Museum and Library.)

not accidental: the leading petitioner for S. 220, which became the 1842 Act, was the prominent New York Democrat Jordan Mott himself, a tireless campaigner for improved patent rights, supported by other "manufacturers and mechanics in the State of New York," most likely his fellow stove makers.<sup>22</sup> The law provided that someone

who by his, her, or their own industry, genius, efforts, and expense, may have invented or produced any new and original design for a manufacture, whether of metal or other material or materials, or . . . for the printing of woollen, silk, cotton, or other fabrics, or . . . for a bust, statue, or bas relief or composition in alto or basso relievo, or any new and original impression or ornament,

<sup>22</sup> *Senate Journal*, 27th Cong., 2nd sess., March 2, 1842, 195, and August 2, 1842, 526; S. 220 (reported from the Committee on Patents and the Patent Office), April 6, 1842. Mott's correspondence as the leading spirit of, and lobbyist for, the first U.S. Convention of Inventors conveys the vital importance he attached to the patent system; Robert L. Meriwether and William E. Hemphill, eds., *The Papers of John C. Calhoun* (Columbia: University of South Carolina Press, 1959), 331–35, 442–43; Melba P. Hay and Carol

Reardon, eds., *The Papers of Henry Clay*, vol. 10, *Candidate, Compromiser, Elder Statesman, January 1, 1844–June 29, 1852* (Lexington: University Press of Kentucky, 1991), 848. Edward S. Renwick, *Patentable Invention* (Rochester, NY: Lawyers' Co-Operative Publishing Co., 1893), 102, explains why manufacturers, particularly foundry men, felt they needed additional protection. Thomas B. Hudson, "A Brief History of the Development of Design Patent Protection in the United States," *Journal of the Patent Office Society* 30, no. 5 (May 1948): 380–99, is a useful guide to the law and its interpretation.



Fig. 14. Detail of the oven door in fig. 13.

or to be placed on any article of manufacture, the same being formed in marble or other material, or any new and useful pattern, or print, or picture, to be either worked into or worked on, or printed or painted or cast or otherwise fixed on, any article of manufacture, or any new and original shape or configuration of any article of manufacture not known or used by others before his, her, or their invention or production thereof . . . and who shall desire to obtain an exclusive property or right therein to make, use, and sell and vend the same, or copies of the same, to others, by them to be made, used, and sold, may make application in writing to the Commissioner of Patents . . . and the Commissioner, on due proceedings had, may grant a patent therefor.<sup>23</sup>

The fee and the period of protection were both half of those applying to patents for “improvements”—seven years and fifteen dollars as opposed to fourteen years and thirty dollars. Patentees were also obliged to mark their goods with the patent date

<sup>23</sup> 1842 Design Patents Act, Sec. 3, from Henry L. Ellsworth (Commissioner of Patents), *A Digest of Patents, Issued by the United States, Including the Years 1839, 1840, and 1841* (Washington, DC: William Greer, 1842), xix.

and the fact of patent protection, on pain of a fine of at least \$100, plus costs—the same penalty as for those who falsely marked unpatented goods.

On the face of it, the law invited a wide variety of manufacturers to take advantage of its provisions. In practice, stove makers made it very much their own—by the late 1840s almost 90 percent of design patents were for stoves; the industry’s share declined slowly thereafter but remained above 50 percent for another decade (fig. 15). Design patents also contributed more than 50 percent of the total number of stove patents (counting inventions and designs together) in every year bar one between 1846 and 1857 and were still about a third of the total by the start of the Civil War.

How are we to explain this singular exploitation of the new law’s opportunities? George Wallis thought that the failure of other American industries to take advantage of it was partly because most of them were derivative of European styles rather than creative—“with the exception of [stoves] . . . it is difficult to suppose that much originality in design could be legally claimed.” The U.S. patent application process also militated against the makers of the most style-dependent products, who had been among its intended or expected beneficiaries. “In the majority of cases, copyright of design can only be valuable to the manufacturer so far as it enables him to secure to himself, by a rapid process, the exclusive immediate use of his invention. . . . The system of examination, with the delay in the decision, as practised in the United States, would be fatal to the value of one-half the designs registered in England.”<sup>24</sup> But the design and product-development processes in stovemaking were slow enough to accommodate themselves to the U.S. patent system, even at the period when it was least responsive to applicants’ needs.

It is possible to offer other reasonable speculations about why stove makers made so much use of the design patent law. Theirs was an industry that had already incorporated more than any others the existing invention patent system into its competitive (and anticompetitive) strategies. It was also one whose products were becoming much more elaborately decorated between the 1830s and early 1840s. Manufacturers therefore had a growing investment in their distinctive designs and competed with one another increasingly on products’ appearance as well as on price, build quality, and utility, which is why Mott and the other petitioners had sought Congress’s help “to secure the rights

<sup>24</sup> Wallis, *Special Report*, 61–62.

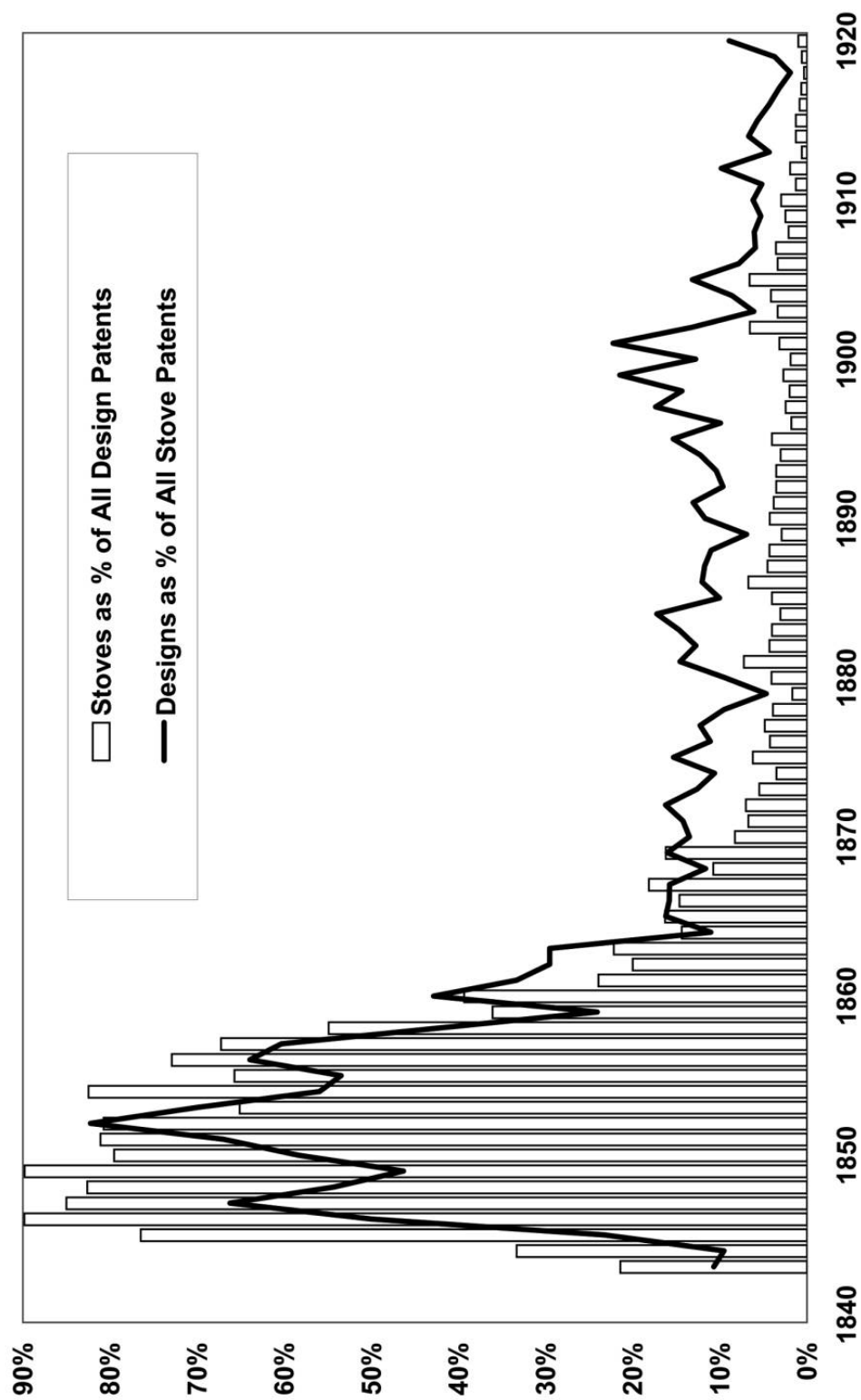


Fig. 15. Stove design patents as a percentage of all design patents and of all stove patents, 1840–1920.



of proprietors of new designs and patterns from fraud.”<sup>25</sup>

The casting process itself made it exceptionally straightforward for stove makers to take advantage of the law. They were already in the habit of molding makers' names and (invention) patent dates and even numbers onto their stoves' surfaces as key elements of the product's identity, so compliance with the marking provision of the new law was particularly easy for them. But the casting process also made it necessary for stove makers to attempt to defend their investment in original and marketable designs with all of the resources of the law. The same improved techniques that enabled stove makers to accurately reproduce in iron their costly wooden master patterns and to use those metal patterns in large-batch production also made it all too tempting for a rival simply to buy a sample stove, take it apart, and use its plates as prototypes for metal patterns of his own, with little loss of quality. Makers could state that their conditions of sale were that their stoves were “for use as a Manufactured Article, and not as a Pattern to cast from” until they were blue in the face, but words alone were no defense. Pattern piracy was, and remained, rife.<sup>26</sup>

But probably the key reason why stove makers took out so many design patents after the mid 1840s is that acquiring a “utility” patent became relatively harder at the same time because of more frequent rejections by overworked patent examiners unable to detect any novelty in stove makers' flood of near-identical microinventions. Thomas Jones, editor of

the *Journal of the Franklin Institute*, ex-commissioner of patents and a patent agent himself, expressed this expert skepticism over and over again in his influential reviews of new “improvements”: when the celebrated Congregational minister Horace Bushnell strayed into the field of stove invention, for example (patent 1177, 1839), Jones concluded that “in the object to be attained, there is here no novelty, and in the means of accomplishing it, just enough upon which to found a claim; with regard to utility, the same amount of this has been obtained by analogous arrangements.” Of a new cooking stove (patent 1352, 1839), he commented that “any new cooking stove must, to a certain extent, nearly resemble many others.”<sup>27</sup> Attitudes like these among examiners made microinventions increasingly hard to patent; judges' and juries' difficulty in discerning the novelty and utility of patents that did get registered certainly made them more difficult to enforce and, thus, less valuable.<sup>28</sup> Accordingly, the stove industry's share of all patents for invention fell from 9 percent in 1845 and 1846 to just 2–3 percent by 1852–53 and for the rest of the 1850s, as a result of an absolute decline in the number of successful stove applications (e.g., nineteen in 1852 vs. fifty-three in 1846), as well as an increase in the overall volume of patenting.

Design patents were easier and cheaper to get, partly because no model was required, just a drawing and brief specification. It was also less difficult to demonstrate their novelty or distinctiveness, so that in 1852, for example, the rejection rate was less than one in six, whereas the comparable figure for invention patents was about three in five. And there was no test of utility to pass. Finally, they seemed to offer at least as good a legal defense against imitation. They thus served as a partial replacement for, as well as a useful supplement to, invention patents in this dynamic, competitive

<sup>25</sup> *Senate Journal*, March 2, 1842, 195.

<sup>26</sup> This is still the way in which owners of old stoves get replacement parts; Clifford Boram, *How to Get Parts Cast for Your Antique Stove: Dealing with a Foundry Is Easier than You May Think* (Monticello, IN: Autonomy House Publications, 1982), 1. It is not entirely unproblematic—because of the shrinkage of molten iron on cooling, iron production patterns should be slightly larger than the parts they are designed to mold, and wooden master patterns a little larger again (the “two shrinks” rule). There is thus some loss of accuracy in using a finished plate as an iron pattern, but nothing a good fitter cannot cope with. Examples of conditions of sale from Burdett, Smith and Co. (December 19, 1873) and Bussey, McLeod and Co. (April 3, 1876) invoices, folder 3, box 14; and Clinton Stove Works (Fuller and Warren), December 22, 1881, accession SC17735, folder 3, box 11, Marcus L. Filley Papers, New York State Library, Albany (hereafter NYSL). This became a standard term, illustrating the continuing existence of a problem, not its solution. *The Report of a trial, for violation of the patent right of the “American Air-Tight” Cooking Stove, in the Circuit Court of the U.S. within and for the district of Mass. Elias Johnson and David B. Cox, Pliffs. Peter Low and George W. Hicks, Defts* (Boston: Damrell & Moore, 1848), provides a fine illustration of the motives and methods of “piracy” in the emerging industry. Low and Hicks's “American Hot-Air” imitated every key feature of their Troy neighbors Johnson and Cox's innovative product that they reverse-engineered and copied, including even its name.

<sup>27</sup> Thomas Jones, “List of American Patents Which Issued in June, 1839, With Remarks and Exemplifications by the Editor,” *Journal of the Franklin Institute*, n.s., 25 (July 1840): 37, and “List of American Patents Which Issued in September, 1839” (October 1840): 248.

<sup>28</sup> Robert C. Post, “‘Liberalizers’ versus ‘Scientific Men’ in the Antebellum Patent Office,” *Technology and Culture* 17 (1976): 24–54; Matilda K. Orr, *Administratrix of Isaac Orr v. James Littlefield and others* (1 Woodbury and Minot, 13 October term, 1845), in James B. Robb, comp., *A Collection of Patent Cases Decided in the Circuit and Supreme Courts of the United States, from their organization to the year 1850*, 2 vols. (Boston: Little, Brown, 1854), 2:323–31; and “American Patents and Inventions,” *US Catholic Magazine and Monthly Review* 5, no. 11 (November 1846): 581–88, esp. 583. Stephen Lubar, “The Transformation of Antebellum Patent Law,” *Technology and Culture* 32 (1991): 932–59, details changes in the law and its enforcement that soon made patents more valuable to their owners.

industry's ongoing search for insulation from the rigors of the market.<sup>29</sup>

### Design Patents and Patentees

A close look at stove design patents, especially in their heyday, shows that their patentees and the larger community of stove inventors were two groups who scarcely overlapped. Between 1830 and 1844, stove invention was a widespread activity across the northern states and seems to have involved relatively few "professional" inventors, that is, repeat patentees. Of the 403 individuals responsible for the 513 traceable stove invention patents, just twenty (5 percent) took out more than two patents each during this period, accounting for ninety-nine (18 percent) of the total; 350 registered only a single patent. Eliphalet Nott and Jordan Mott stood at the head of the list, with eighteen patents each. Several other repeat patentees were also closely identified with the emerging industry, and their innovative designs, rapidly imitated, would also make a significant contribution to product development. But stove invention was generally quite a "democratic" or at least grassroots activity, open to optimistic amateur tinkerers. It was also apparently quite individualistic: only twenty-seven patents were taken out jointly with another person, usually a family member. Finally, stove patenting was not a particularly concentrated activity. The largest cities, where stove manufacturing and trading were focused, commanded the lion's share, predictably enough, and these patents included almost all that became commercially important (table 1). But small-town mechanics across the northern states evidently also felt free to try to get in on the act, with the result that patenting was probably less concentrated than the emerging industry itself (table 2).

The contrast with design patents is quite stark. The first notable fact about stove design patents is how many of them there were: 806 between the years 1845 and 1859 versus 681 invention patents.

This large figure reflects, but does not fully represent, one of the mature stove industry's key characteristics: the enormous number of different stove types and models that firms produced and sold. There were far more separate stove designs in production at any one time than there were design patents in force. Samuel Vose of Albany, New York, for example, one of the most active design patentees, had twenty-eight separate models in his 1853 catalog, more than his total number of design patents to date, but some of them shared the same patented features, or were adequately covered by invention patents instead, and others (cheaper, older, more generic) were not patented at all.<sup>30</sup> Stove designs could also be (1) pirated, (2) lawfully copied once the seven-year patent expired, or (3) assigned by the patent holder to other makers who engaged in "badge engineering"—in other words, putting their own name on the stove's front plate but making no other alterations—and then sold the results, ideally in a noncompeting market territory. The total number of genuinely distinctive stove designs in production and on sale at any particular time is therefore impossible to calculate, but by the mid 1870s, twenty-eight Albany and Troy firms—less than one-seventh of the industry's members but with about one-fifth of production capacity—reported 850 separate, named models, some of them undoubtedly identical with one another.<sup>31</sup> One hundred fifty firms, about three-quarters of the national total, reported a similar average of roughly thirty models per company at the same time. It would thus be reasonable to estimate that in the centennial year the stove industry presented American consumers with at least 6,000 models of cooking stoves and ranges, heating stoves and furnaces, many of them available in a number of different sizes and with innumerable optional extras.<sup>32</sup> Model proliferation was the manufacturers' response to the heterogeneous demands of the consumers they dealt with, but it undoubtedly added heavily to the industry's patternmaking costs and the importance that stove makers attached to design issues.

The second key fact is that stove design, certainly as reflected in the patent record, was a much more localized activity than stove inventing was or

<sup>29</sup> Delos W. Beadle, *The American Lawyer, and Business Man's Form-book* (New York: Ensign, Bridgman & Fanning, 1851), 136–46, devotes about nine times as much space to the invention patent process as to the much simpler design patents; 1852 figures from Joseph Whitworth, *New York Industrial Exhibition. Special Report of Mr. Joseph Whitworth*, House of Commons Command Paper no. 1718 (London: Harrison & Son, 1854), 35; David Root v. Ball & Davis, July term, 1846, in John McLean (Circuit Judge), *Reports of Cases Argued and Decided in the Circuit Court of the United States, for the Seventh Circuit*, 6 vols. (Cincinnati: H. W. Derby, 1851), 4:180–81.

<sup>30</sup> *Illustrated Book of Stoves Manufactured by Vose & Co., Albany, N.Y.* (Albany, NY: J. Munsell for E. H. Pease, 1853).

<sup>31</sup> "Albany and Troy Stoves: Alphabetical Index of Manufacturers and of the Stoves Made by Them," *MW* 3, no. 21 (May 22, 1875): 3.

<sup>32</sup> "New Publications: Josiah Jewett (Secretary), *Names of Stoves, Ranges, and Furnaces*," *MW* 6, no. 23 (December 2, 1876): 6.

Table 1  
Invention Patents, 1830–44, by City

	Number	Percent of total	Cumulative percent
New York	65	12.7	
Boston	33	6.5	19.2
Philadelphia	32	6.3	25.4
Schenectady, NY*	21	4.1	29.5
New Haven, CT	17	3.3	32.9
Albany, NY	16	3.1	36.0
Troy, NY	14	2.7	38.7
Cincinnati	11	2.2	40.9
Baltimore	10	2.0	42.9
Poultney, VT†	6	1.2	44.0

\*Residence of Eliphalet Nott.

†Residence of Henry Stanley.

ever had been. It was concentrated in a handful of core states; New York state alone did more than half of the total business (table 3).

At the level of the city, the picture is even clearer (table 4). Stove design was a highly specialized activity, carried on by a handful of practitioners in most of the industry's major production centers. It was, however, far more concentrated in the New York Capital District and other cities in the Hudson River–Erie Canal corridor than was manufacturing capacity itself. Each of the major stovemaking cities supported small groups of dedicated designers—some of them also stove manufacturers, but the most influential among them were pattern makers pure and simple. Four men—Samuel Gibbs and Samuel Vose of Albany, New York; Nicholas Vedder of Troy, New York; and Garretson Smith of Philadelphia—were each responsible for more than 5 percent of total stove design patents issued in the first fifteen years of the law's operation. Together with Troy's pioneering Ezra Ripley, they filed a quarter of them

all. Just twenty men accounted for more than half of the total—or at least, theirs were the first names on design patents, for which they often shared authorship. Design patenting was a more collective enterprise than stove inventing: more than a quarter (213) of design patents had at least two signatories (fifty-seven had three; six had four), indicating their origin in small design studios organized along partnership lines.

The final major difference between stove inventing and designing was that design patents often bore evidence of their status as tradable intellectual property: they already included the names of the firms to which they had been assigned, in other words, by which they had been bought (fig. 16). Stove inventions were the work of men (and a very few women) who either intended to push them into production themselves or hoped to be able to sell them to other manufacturers or to use them in the courtroom (sometimes the most profitable option). Assignment was commonplace for successful patents,

Table 2  
Invention Patents, 1830–44, by State

	Number	Percent of total	Cumulative percent
New York	188	36.8	
Massachusetts	85	16.6	53.4
Pennsylvania	56	11.0	64.4
Connecticut	44	8.6	73.0
Ohio	27	5.3	78.3
Vermont	24	4.7	83.0
New Hampshire	24	4.7	87.7
Maine	20	3.9	91.6
Maryland	11	2.2	93.7
New Jersey	10	2.0	95.7



Table 3  
Stove Patents, 1845–59, by State

	Number	Percent of total	Cumulative percent
Designs:			
New York	456	57	
Pennsylvania	144	18	74
Ohio	77	10	84
Massachusetts	51	6	90
Rhode Island	29	4	94
New Hampshire	19	2	96
Maine	12	1	98
Connecticut	5	1	98
Maryland	4	0	99
Missouri	3	0	99
Inventions:			
New York	275	40	
Pennsylvania	104	15	56
Massachusetts	102	15	71
Ohio	61	9	80
Connecticut	19	3	82
Maryland	17	2	85
New Jersey	16	2	87
Virginia	11	2	89
Washington, DC	10	1	90
Vermont	9	1	92

Table 4  
Stove Patents, 1845–59, by City

	Number	Percent of total	Cumulative percent
Designs:			
Troy, NY	167	21	
Albany, NY	150	19	39
Philadelphia	136	17	56
Cincinnati	63	8	64
New York	55	7	71
Providence, RI	29	4	74
Boston	27	3	78
Rochester, NY	18	2	80
Utica, NY	15	2	82
Buffalo, NY	14	2	84
Inventions:			
Philadelphia	65	10	
New York	64	9	19
Albany, NY	59	9	28
Boston	51	7	35
Cincinnati	36	5	40
Troy, NY	35	5	46
Baltimore	15	2	48
Brooklyn, NY	10	1	49
Washington, DC	9	1	51
Lowell, MA	8	1	52

*Design No. 690.*  
*E. Ripley & N. S. Vedder*  
*Assignors to F. F. Filley*  
*Parlor Stove Design*

*Patented January 23, 1855*



Fig. 16. Patent drawing for Ezra Ripley and Nicholas S. Vedder, "Parlor Stove" ("The Magnolia," assigned to Giles F. Filley), patent D690, Troy, NY, 1855. (U.S. Patent and Trademark Office.)

but the record of it is usually separate from the patent documents themselves; it only had to be recorded there if the inventor's whole interest had been sold before the grant of the patent, which rarely happened. Stove designs were much less commonly speculative in the same way. Design patents often record a process in which stove makers commissioned specialized pattern makers to produce a new model that would be as uniquely theirs as the law made possible or whose subsequent use by other manufacturers would in theory be theirs to control and profit from. The fact that so much of the stove trade came to rely on a handful of designers for this crucial service was another strong force driving the convergence of the growing industry on products that were increasingly similar in outward appearance as well as in internal arrangements and functionality.

#### The Master Pattern Makers

There are no surviving records from any of these pattern shops, apart from the design patents (and some resulting stoves) themselves. But contemporary business writer Edwin Freedley did publish a few capsule biographies of some of the most influential proprietors. James Wager of Troy, New York, for example (with an invention patent and nineteen design patents to his credit between 1844 and 1855), started out in 1835 as "one of the first in that section of the country to engage in supplying home and distant manufacturers with choice stove patterns." He followed in the trail blazed by Samuel Hanley, "who, in 1830, was the first in Troy . . . to claim for his art the position of a distinct, regular business." Wager manufactured stoves himself and

also sold “patterns of some of the best stoves in the country to all sections of the United States.”<sup>33</sup>

Garretson Smith and his partner Henry Brown entered the business a decade after Wager. In Philadelphia, “competition . . . had not yet called for any very great degree of skill in the arts of design. Pattern makers were usually able to satisfy their customers by copying with slight alterations the designs of other stoves.” But Smith and Brown “determined to institute a new era, and the designs which they originated attracted so much of the public favor to those manufacturers who adopted them, that others were induced to draw upon their inventive talent.”<sup>34</sup>

Nicholas Vedder was the most productive and influential of them all. One of his former apprentices, who went on to become a prominent pattern maker himself, called him “the prince of stove designers . . . to whom we owe the greater part of our modern conveniences in the cooking stove, either as absolute inventor or else the man who worked out the idea and made it practical.”<sup>35</sup> According to Freedley, he held “the same relation to the stove manufacturers of the United States, that the modistes of Paris bear to the tailors and dress-makers.” His skills as stove inventor, designer, and pattern maker brought consumers “those beautiful shapes which both warm and grace our parlors, while in the kitchen he has been our patron and friend in economizing our fuel.”<sup>36</sup>

Vedder was already “extensively engaged in the manufacture of patterns for the principal cities of the United States” by the mid 1840s, when he bought Hanley’s pioneering stove pattern shop. Over the next decade he turned it into “the largest business of the kind in the United States,” with about thirty employees and “an unrivalled reputation not only among the Stove manufacturers of Troy, but among the leading stove and iron houses throughout the country.”<sup>37</sup> Between 1851, when

he took out his first patent in partnership with Ezra Ripley, and his death in 1879, he was first named patentee on 221 designs and the second name on a further sixteen; key members of his team added another ten in their own right, so that his workshop produced one-sixth of all the patented stove designs in this period. Over time, his influence and his output both grew: in his last decade, accounting for more than half of his recorded work, he was responsible for 30 percent of patented stove designs.

Vedder devised many of the techniques and tools of the specialized trade of stove patternmaking that he helped create, as well as its most successful business model.<sup>38</sup> While Ripley almost always worked to commission, Vedder also began to take the risk of originating designs, then finding buyers for them. By the 1870s he was introducing a suite of new models every year, releasing them all onto the market at the same time, and publishing a catalog, of which, unfortunately, no copies seem to survive, though many numbered pages from it are reproduced in patent office records. He usually retained ownership of his patents and sold identical sets of iron production patterns plus the right to use them to numerous customers right across the industrial belt, who could simply buy what they needed from his product list. Clients added their own names to the stoves—Vedder did not name his own products, simply emblazoning them with one word, “patented,” as a placeholder for the names his clients chose—but made few other changes, thereby further increasing Vedder’s influence on product evolution and design convergence. And, whereas Ripley’s business was confined to other Capital District firms, Vedder reached out to major stove makers nationwide with both a custom-design service and his off-the-shelf product line. For example, when Giles Filley was starting up production in St. Louis, the most westerly production center, where there were no local stove designers

<sup>33</sup> Edwin Freedley, *Leading Pursuits and Leading Men* (Philadelphia: Edward Young, 1856), 276.

<sup>34</sup> *Ibid.*, 279. Smith and Brown also were able, of course, to take advantage of design patent protection from the very outset of their business, which must have been an incentive for them to dedicate themselves to it.

<sup>35</sup> J. L. Gobeille, “Engineering and Mechanical Problems in Cook’s Stove Construction,” *Journal of the Association of Engineering Societies* 5 (1885): 204–13, quotation from 205; “Stove Notes,” *Stoves and Hardware* 9, no. 10 (November 1, 1886): 17.

<sup>36</sup> Freedley, *Leading Pursuits*, 276.

<sup>37</sup> *Ibid.*, 277. According to Wayne Somers, comp. and ed., *Encyclopaedia of Union College History* (Schenectady, NY: Union College Press, 2003), 523, Vedder was Eliphalet Nott’s assistant in his “stove laboratory,” which was presumably where he learned his trade in the 1830s. “The Prohibition Nominee. Sketch of the Candidate for

Governor and his Father,” *New York Times*, September 13, 1885, 6, gives 1835 as the date when Vedder began his business, as does the Citizens’ Association (Troy, NY), *The Industrial Advantages of Troy, N.Y. and Environs* (Rochester, NY: James P. McKinney, 1895), 51, but this seems improbably early; it may elide the histories of the Hanley and Vedder firms to exaggerate the latter’s age. Vedder retired in 1879, shortly before his death, selling his interest in “the largest stove pattern making establishment in the State, if not in the country” to his bookkeeper, Henry Clay Bascom. In 1895, by which time most of the stove manufacturing industry had abandoned Troy, Bascom still employed 125 skilled men, offering companies nationwide a comprehensive design-and-build service.

<sup>38</sup> International Correspondence Schools, *Patternmaking*, pt. 5, 13, on Vedder’s standard curves for drawing and gauging.

to call on in the early 1850s, he bypassed Cincinnati, the nearest city with a small corps of pattern makers, and turned instead to Troy, New York, where his older brother Marcus was an attorney and served as his buying agent. Vedder supplied the quality designs Filley needed in order to achieve his ambition of persuading western customers that his Excelsior Stove Works' home-produced goods could rival eastern imports.<sup>39</sup> The stove Vedder designed, the "Charter Oak," became the nation's largest seller and the foundation of Excelsior's fortunes; by the early 1870s it was the country's biggest producer (fig. 17). Clients like Giles Filley and later Detroit Stove, which achieved a similarly impressive growth record, were all the advertisement Vedder's firm needed.

### The Patternmaking Process

How did Nicholas Vedder's firm and its lesser rivals function? Stove designs were first of all sketched out on paper, using the craft's own peculiar drafting customs, then translated into full-size wooden models, and finally into patterns for the individual component plates. With the most elaborately decorated products, particularly high-value heating stoves, there came to be an intermediate stage between the design sketch and the wooden model, with stoves being sculpted as full-size clay or plaster models first. This technique, designing from the outside in, emphasized the increasing attention given to surface form, which changed from season to season, rather than to the internal arrangement of working parts, which evolved much more slowly (fig. 18). In this case, detailed working drawings and wood patternmaking could begin only after the external shape had been decided. From the wooden master patterns prototype plates would be molded, assembled, and tested. Any necessary changes would be incorporated into reworked wooden versions until finally the iron production patterns could be cast. The wooden masters were then cleaned, lacquered, polished, and put away in a (supposedly) fireproof store until required again, to produce a new set of production patterns, or—when a stove

was no longer in production—for the casting of occasional replacement parts on demand, a lucrative business in its own right.<sup>40</sup>

This was a complicated, highly skilled, and costly process, uniting artistry, draftsmanship, precision woodworking and metalworking, and considerable engineering knowledge, for example, of combustion and heat-transfer processes or of how a small redesign would make a plate cheaper to mold, easier to assemble, and less likely to crack. It also demanded a detailed understanding of what both the market required and patent law permitted, that is, how closely one could imitate a successful rival without risking an infringement suit. Jafew Van Buren, superintendent of the pattern department at Rathbone, Sard and Co., Albany's largest firm, later explained this part of his role: "The designer is supposed to have a knowledge of the striking features of all competing goods."<sup>41</sup>

Vedder's and other major pattern shops could do every aspect of the work for their customers, deploying a range and quality of experience and skills that none but the largest stove makers could hope to replicate in-house. Stove makers did need to have their own small patternmaking teams, particularly for repairs and minor modifications, but for new designs and major alterations it made sense to go out to specialist firms. This handful of businesses thereby became major forces for product development and standardization.<sup>42</sup>

### Stove Makers and Their Design Choices

The few surviving collections of stove manufacturers' records provide little detail about how they dealt with stove designers, whether outside contractors like Vedder or, in the case of the larger firms, their own design departments. The records of the Green Island Stove Foundry, a representative Troy enterprise owned and managed from the

<sup>39</sup> Giles F. Filley to Marcus L. Filley (then still a lawyer in Troy), December 23, 1854, accession MC12, folder 7, box 7, Marcus L. Filley Papers, Rensselaer Polytechnic Institute, Troy, NY (hereafter RPI). His letter of May 14, 1868, folder 28, box 4, demonstrates that the business relationship was ongoing; "Supreme Court of Missouri. Giles F. Filley, Respondent, v. A. D. Fassett et al., Appellants [Filley v. Fassett]," *American Law Register* 17, no. 7 (July 1869): 402–11, esp. 403.

<sup>40</sup> Editor, "Some Notes About Stove Making," *MW* 3, no. 24 (June 12, 1875): 4; "The Inside of a Modern Stove Foundry [Magee, Boston]," *Stoves and Hardware* 9, no. 14 (January 1, 1887): 16; International Correspondence Schools, *Patternmaking*, pt. 5; and "Features of the Michigan Stove Company's Plant and Methods," *Iron Trades Review* 27, no. 9 (March 3, 1904): 72–79, esp. 75–76—probably written by William J. Keep, its Troy-trained superintendent—on clay/plaster modeling. An excellent article, "The Evolution of a Red Cross Range," 1902, describes and illustrates the methods of the Co-Operative Foundry Co., Rochester, NY, <http://www.myantiquestove.com/history/page/show?id=2054587:Page:2827>.

<sup>41</sup> *Troy Patent Testimony*, 62.

<sup>42</sup> "Stove Patterns," *MW* 4, no. 21 (November 20, 1875): 1, on the advantages of going to a specialist.



*Manuscript note: Oct 27 1883*

**CHARTER OAK.**

6-inch,    7-inch,    8-inch,    9-inch.

MANUFACTURED BY

**M. L. FILLEY, 237 RIVER STREET,**

**TROY, N. Y.**

*For Sale by*

Fig 17. Marcus Filley, the "Charter Oak," Troy, NY, ca. 1874. Broadside. (Manuscripts and Special Collections, New York State Library.)



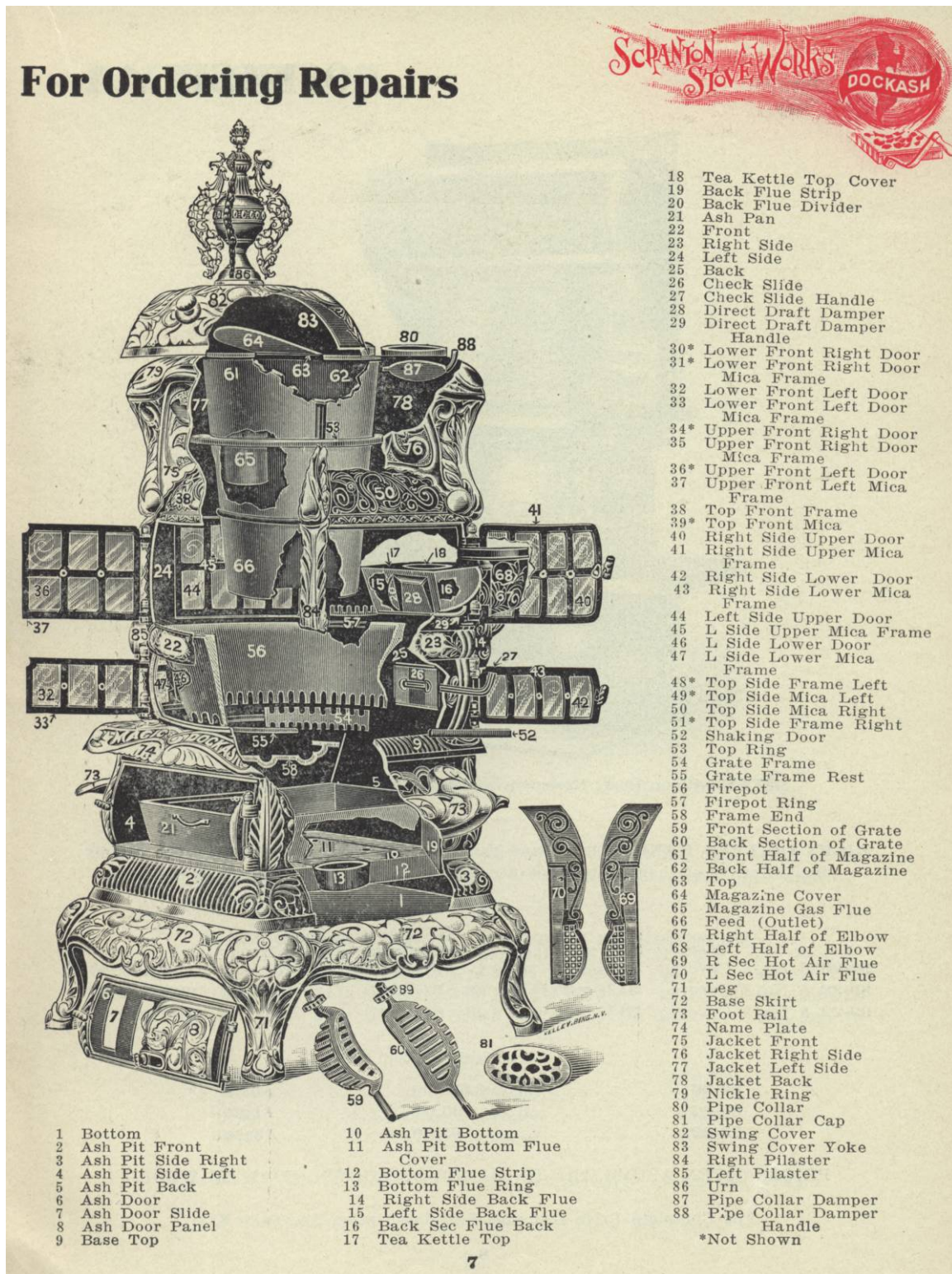


Fig. 18. Sectional view of "Magic Dockash" base burner. From Scranton Stove Works, *Dockash Stoves Catalogue No. 46* (Scranton, PA: Koehler, 1911), 7. (Hagley Museum and Library.)

mid-1850s by Giles Filley's older brother Marcus, who abandoned the practice of law in 1854 and followed Giles into the stove trade, provide the best primary evidence of the everyday workings of the relationship between a stove maker and his jobbing pattern maker. Filley sent Vedder a constant flow of orders for new patterns and major changes to existing ones and received itemized bills for parts and labor in return, so that he could allocate pattern costs to particular stove models and fix their prices accordingly. Labor costs were denominated in quarter-days and varied in price depending on whose days' labor they were. Vedder's own naturally commanded the highest cost, as the proprietor, who described himself in the 1865 state census simply as "head carver," continuing to do skilled work himself when required, even though he had tens of employees by then. He was Filley's most expensive, essential, and trusted supplier.<sup>43</sup>

Stove manufacturers' records are more informative about how they decided what to commission or buy from pattern makers, what to imitate from their competitors, and how their own products needed to be modified and presented. The source of their information was in most cases what one might call, somewhat modifying Ruth Schwartz Cowan's original meaning, "the consumption junction," the nexus where makers, dealers, and consumers interacted with one another—in other words, the market.<sup>44</sup>

Stove manufacturers had the great advantage of being directly connected with their customers—with local stove dealers, because makers functioned as their own wholesalers, and even with individual consumers, because they often operated as retailers too. They did not have to rely on costly

intermediaries for market information.<sup>45</sup> It poured in unprompted. The files of the Green Island Stove Works are full of suggestions and requests for minor modifications. Some were intended to improve durability and serviceability, others to meet the specific needs of niche markets; for example, the No. 9 New York and Erie stove would not sell in Vermont without a special thirteen-inch boiler hole or "dairy top" to suit cheese makers (fig. 19).<sup>46</sup>

Marcus Filley's correspondents went beyond making small suggestions to offer detailed strategic advice on how to meet the competition. For example, in 1867 D. L. Fullerton, a major customer jobbing stoves in the new markets of the Reconstruction South ("even the Negroes are buying them"), commented on how Filley's leading cook-stove models should be made to look: "In appearance [the Civilian] ought to compete with the Henry Clay [another Troy stove;] it will also have to compete this winter with the 'Peerless' (Boston), 'Cotton Planter,' 'Marion' (Albany). . . . I am fearful competitors will get ahead of me on Premium stoves. I think the Texana would be *more imposing* if set up on feet 9 inches high." Sometimes these reports responded to requests for information: "There is no anti-dust stove in the market that I know of unless the Olive Branch has that convenience. . . . You ask how that stove is taking here." But Filley could usually rely on his customers to take the initiative, particularly in providing critical feedback on his products. "I have been thinking of the credit of the Chief Cook. I fear its good name will suffer before long for want of a more substantial fire back. . . . I believe a different or lighter front grate and heavier fire back for wood stove would be more satisfactory. Do not think me arrogant, I simply give benefit of my experience in *selling your stoves*."<sup>47</sup>

Similar information flowed in from Filley's partner, who ran their New York sales agency. He reported, for example, that the Cottage Cook needed a new top to meet the requirements of two distinct groups of city buyers—"oyster and liquor dealers for the little restaurant cooking they require" and

<sup>43</sup> Vedder to Filley, February 4, 1863, folder 21, box 1; Vedder to Filley, January 1, 1864, folder 1, box 2; Vedder to Filley, January 1, 1867, folder 3, box 5—all in Filley Papers, NYSL; Vedder to Filley, February 2, 1869, folder 20, box 1, Filley Papers, RPI; Vedder to Filley, 1872, "Targets" folder, box 1, Filley Papers, NYSL; census information from <http://www.connorsgenealogy.com/Troy1865/3rdWard-R.htm>. The 1868 and 1871 pattern accounts both came to well over \$3,000, about 5 percent of the firm's total cost for supplies; Gordon Winder, "The North American Manufacturing Belt in 1880: A Cluster of Regional Industrial Systems or One Large Industrial Belt?" *Economic Geography* 75 (1999): 71–92, esp. 83. Most of this cost (approximately 80 percent) was for pig iron and other raw materials; in other words, of merchandise and services costs, the pattern account was one of the largest (second only to, and about half as much as, that for all bought-in component parts).

<sup>44</sup> Ruth Schwartz Cowan, "The Consumption Junction: A Proposal for Research Strategies in the Sociology of Technology," in *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, ed. Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch (Cambridge, MA: MIT Press, 1987), 261–80.

<sup>45</sup> Harris, "Inventing the U.S. Stove Industry," discusses distribution in detail; Hansjörg Siegenthaler, "What Price Style? The Fabric-Advisory Function of the Drygoods Commission Merchant, 1850–1880," *Business History Review* 41 (1967): 36–61, puts a price on what a consumer-products industry might have to pay for this kind of intelligence.

<sup>46</sup> Jones and Co., E. Highgate, Vt., to Filley, April 15, 1863, folder 11, box 2, Filley Papers, NYSL; E. R. Stedman, Sparta, Ga., to Filley, July 8, 1869, folder 22, box 4, Filley Papers, RPI.

<sup>47</sup> D. L. Fullerton, Augusta, Ga., to Filley, July 23, 1867, folder 5, box 4; and February 4, 1868, folder 3, box 6—all in Filley Papers, NYSL.



No. 451.

Design for Stove by John J. Savage, Troy, N.Y.  
assigned to Morrison & Tibbitts of same place

Patented April 13, 1852.

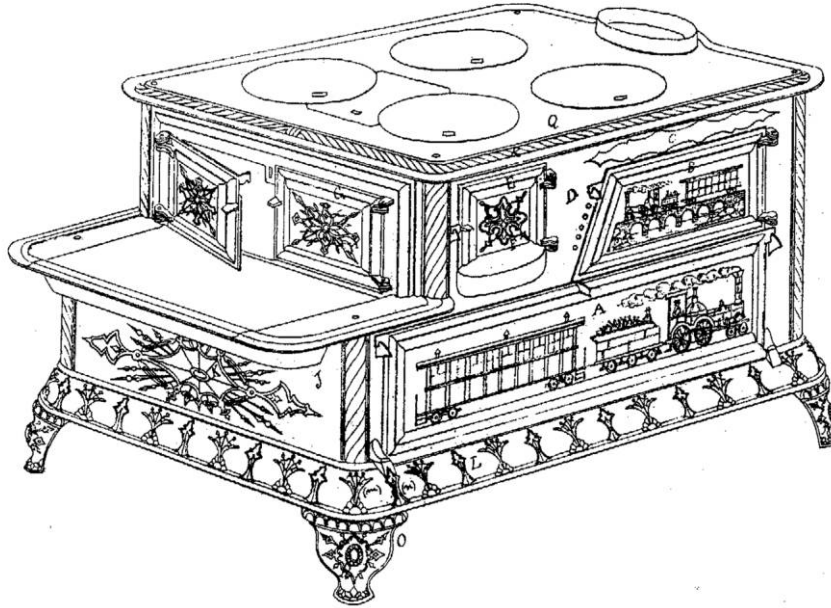


Fig. 19. Detail of patent drawing for John J. Savage, "Stove," patent D451, Troy, NY, 1852. (U.S. Patent and Trademark Office.)

"housekeepers who want a stove in the laundry room." Both of these constituencies needed to use large wash boilers, and the latter also wanted extra space on which to heat sadirons.<sup>48</sup> Modifications of this sort were quite cheap, requiring changes to just a couple of a stove's plates (and therefore patterns), and worthwhile if they meant gaining an edge in a specific market. The stove trade's manufacturing techniques were sufficiently flexible to accommodate partial customization of small batches of otherwise-standard goods.

More potentially costly advice also came from the company's traveling salesmen, dealing with retailers and meeting the competition in the firm's extensive and varied sales territories from New England to the Midwest and down through Texas. For example, in 1881 one reported at length on what was needed to win and then hold a major customer and enable him to build his market: he was selling the "Iron King," made by Charles Noble and Co. of Philadelphia and designed by Filley's

own pattern maker Nicholas Vedder (D11175, 1879), but might be persuaded to buy Filley's "Texas Girl" if the price, quality, and crucially the design were right. Visual appeal was all-important: a customer would come into the store and see "an attractive looking stove" with a "nickel knob and Panel Plate of a man's head with helmet on it" that "catches his eye. Now I think if we change the Texas Girl to look like the Iron King or some think [*sic*] like it I can sell enough next year not only in Southern but Northern Texas to more than pay for the change."<sup>49</sup>

Responsiveness to market signals like the above, and endless comparison between a company's product line and those of its competitors, drove the design process even in a mid-sized family business like Filley's. The result was that every feature of a stove, from its name on down, was carefully chosen to make it seem enough like its rivals to be a satisfactory alternative and (ideally) just sufficiently different to possess an edge. If one company brought out a

<sup>48</sup> Albert Lyman to Filley, October 22, 1870, folder 3, box 3, Filley Papers, RPI.

<sup>49</sup> George Meriwether, Victoria, Texas, to Filley, folder 7, box 6, Filley Papers, RPI.

"Bismarck" to capitalize on German-American national pride in the aftermath of the Franco-Prussian War, another was sure to respond with a "Moltke." As a stove salesman with forty-seven years in the business reported in 1894, "it would be impossible to make a stove to-day and not have it have some points of resemblance to other stoves; I mean a saleable stove."<sup>50</sup> There was in fact nothing new about this, certainly not by the 1890s; it had long been a structural characteristic of this pioneering consumer-durable industry, none of whose couple of hundred constituent firms ever developed enough market share to be able to afford the risk of pursuing an independent line on matters of price, design, or business practices. Almost all of them chose instead to become practiced imitators rather than significant innovators.

The planning and implementation of imitation and incremental change were thus the key strategic decisions companies had to make, and they resulted in significant investment. At Marcus Filley's stove works, everything depended on the boss; in larger firms, things were somewhat more formalized, for example, the Detroit Stove Works in the 1860s and 1870s with its detailed, minuted board of directors' discussions and decisions. At the Reading (Pennsylvania) Stove Works in the 1890s, the scale of investment was similar to the Detroit firm's, though the manner of controlling it was a little different. Here pattern purchase or modification decisions were devolved to the board's most active and important working group, the Pattern Committee, which was informed, in particular, by an annual gathering of the company's traveling salesmen and the managers of its branch houses in its major regional markets. Committee recommendations were then discussed, often in some detail, by the full board, in light of its policy "to carefully consider the large number of suggestions and requests for new goods made by salesmen and others, and . . . to select for the additions to the line, such stoves and ranges as yield the largest profit, even though they are not always such as will have the largest sale."<sup>51</sup> Market sensitivity like

this still locked the mature industry of the 1890s into the habits of model proliferation and constant superficial innovation which had characterized it for almost half a century.

#### From the Design Patent System to the Annual Model Change

Given all that has been demonstrated so far about the importance of design patents to the stove industry from the early 1840s through a fifteen-year period of rapid growth and maturation, how is the declining tendency to use them that set in by the end of the 1850s to be explained? The absolute number of design patents issued fell, and their share of the total volume of stove patenting fell even more, from a high of 82 percent in 1852 to a low of 11 percent by 1864, before stabilizing in the range of 10–15 percent until the end of the century.<sup>52</sup>

Part of the explanation is simply the reverse of the major reason why stove makers seized on design patents in the first place. Restrictive administration and tight funding of the U.S. Patent Office had made patents for invention relatively hard to secure, but in the early 1850s these policies began to be relaxed, making such patents much more accessible and attractive. Concurrent changes in the federal courts' practice (particularly the development of the injunction route to enforcement, in place of jury trials) also made them more valuable.<sup>53</sup> The volume of successful invention patenting responded swiftly to these institutional changes, more than doubling between 1853 and 1854, doubling again by 1858, and—after a modest decline during the Civil War—again by 1866. It leveled off after 1867 at around 12,000–14,000 patents per year until the end of the 1870s versus around 500–900 in the restrictive period from the start of the 1840s to the early 1850s.

The stove industry participated in this growth process, with numbers of stove inventions rising from a low of nineteen in 1852 to a new high of 123 by 1859, falling off sharply at the start of the Civil War, and then surging from 1864 onward to an all-time peak of 429 in 1869. Some of these were "genuine" inventions, associated with the development of

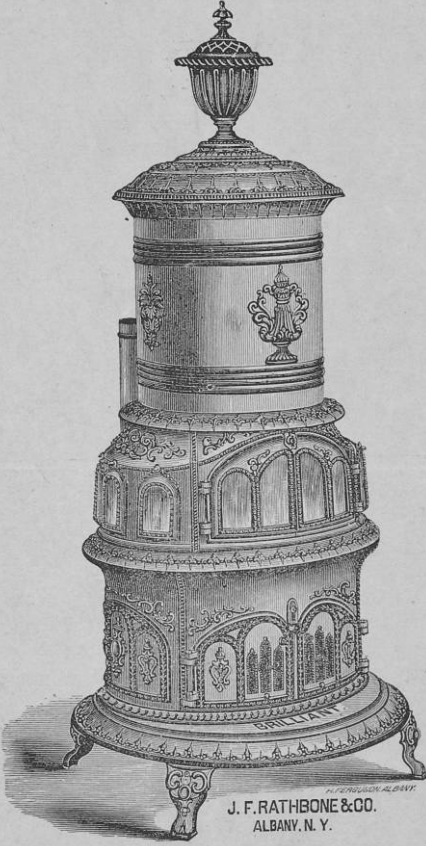
<sup>50</sup> Charles Young, salesman for Waters Co-Operative Stove Co., Rochester, NY, in *Troy Patent Testimony*, 23. The case was all about the nickel-plated reflector front on a market-leading, soon universally imitated, base burner and pitted some of the industry's largest firms against one another.

<sup>51</sup> Reading Stove Works [hereafter RSW] Minutes, vol. 2, February 14, 1894, 67; and February 20, 1895, 156; vol. 1, February 12, 1891, 10; April 9, 1891, 38 (full-board discussion on how to prevent the tops of ranges "from bulging up at the joints where the sections join"); August 13, 1891, 67–68 ("advisability of adding a four hole Range to our line"), Accession 1828, Hagley Museum and Library, Greenville, DE.

<sup>52</sup> A major reason for the 1864 low was the Civil War, which first of all disrupted trade and discouraged new model development and then created an easy market in which "anything made of cast iron in the shape of a stove could be sold at a price which paid the maker," an equally depressive effect on innovation; editorial, "The General Aspects of the Stove Founding Industry," *MW* 6, no. 14 (September 30, 1876): 6.

<sup>53</sup> Post, "'Liberalizers' versus 'Scientific Men,'" esp. 44–54; and Lubar, "Transformation of Antebellum Patent Law," esp. 956–58.

**THE BRILLIANT!**



J. F. RATHBONE & CO.  
ALBANY, N. Y.

The Finest Self-Feeding Base-Burning Revertible Flue Heating Stove ever Invented!

FOR SALE BY

**HADLEY & NICHOLS,**

**No. 217 MAIN ST., BUFFALO, N. Y.**

J. E. RATHBONE & CO., MANUFACTURERS, ALBANY, N. Y.

Courier Steam Printing House, 178 Washington Street, Buffalo, N. Y.

Fig. 20. J. F. Rathbone and Co., "The Brilliant" base burner, Albany, NY. Broadside. Hadley and Nichols, Buffalo, NY; print by H. Ferguson, Albany, NY, ca. 1870. (Printed Book and Periodical Collection, Winterthur Library.)

an entirely new stove type, the base burner—a magazine stove in which fuel was gravity fed to the combustion zone. Base burners were immensely powerful and efficient heaters possessing the great advantage of being able to be kept burning continuously right through the winter season, reducing the labor

of keeping warm and increasing domestic comfort (figs. 20–21).<sup>54</sup> But most were just the usual

<sup>54</sup> Dennis G. Littlefield, *A History of the Improvements Applicable to the Base Burning or Horizontal Draught Stove . . . by the Inventor of the Railway Coal Burner, Parlor Furnace, &c.* (Albany, NY: C. Van Benthuysen, 1859)—a self-serving but thorough account.





Fig. 21. Detroit Stove Works, "Crown Jewel" parlor oven base burner. From *Metal Worker* 6, no. 14 (September 30, 1876): 1. (Hagley Museum and Library.)

microinventions, intended to serve their old, familiar marketing and competition-controlling functions.

They did not serve especially well, given that, as the *Metal Worker* editorialized on the chronic, perhaps growing, problem of piracy, "If it has any

points of value . . . the inventor may reasonably expect to see his idea appropriated; and if it should become a fashionable 'frill,' the probabilities are that before the end of the season, every house in the trade making stoves to which it is applicable

would apply it.” But stove makers seem to have seen little better alternative to continued reliance on their traditional, increasingly costly and uncertain weapons in the endless and intensifying war for trade.<sup>55</sup>

The other side of the account is that design patents had not in practice fulfilled stove makers’ hopes that they would function better than invention patents. In 1860 Henry Howson, an experienced Philadelphia patent attorney with stove makers prominent among his clients, wrote in the Franklin Institute’s *Journal* a detailed explanation for this disappointment. The 1842 law offered “a very doubtful protection against infringers.” A stove maker “getting up a new design for a stove . . . must . . . be possessed of a well cultivated taste, a readiness for producing figures and ornaments of pleasing effect,” and “the requisite capital to meet the expenses.” He estimated these costs at \$1,000–\$3,000 for each of the three or four sizes needed, a high figure even if it included special production equipment as well as wood and iron patternmaking and prototyping. And yet the law only imperfectly protected this large investment, and then only for a seven-year term. Howson’s argument was that if the fee was doubled, to make it the same as for invention patents, and the term was doubled, too, the law would at last deliver on its promise, and the volume of applications would increase, “the benefit being especially felt by the manufacturers of stoves.” Howson was on the side of the larger firms, who bore the brunt of the business of innovation, rather than “small manufacturers, men with neither taste, enterprise, nor capital,” who were “in the habit of waiting for the expiration of a patent of a popular and elaborately carved stove, and after this expiration, of purchasing a stove, using the plates for patterns, and furnishing them to the public to the injury of the original producers.” If they were forced to wait fourteen rather than seven years, the original designers could recover all their investment first.<sup>56</sup>

<sup>55</sup> Editorial, “Litigation in the Stove Trade,” *MW* 6, no. 15 (October 7, 1876): 6.

<sup>56</sup> Howson, “Proposed Remedial Alterations of, and Additions to, the Present Law Regulating the Grant of Letters Patent for Designs,” *Journal of the Franklin Institute* 39, 3rd ser., vol. 69, no. 4 (April 1860): 265–70, quotations from 266 and 269. Howson’s figures were inflated for rhetorical effect—fifteen years later A. E. Chamberlain, of Chamberlain and Co., Cincinnati, reported prewar figures as \$100 per size for five sizes of a range, with current costs of at least \$250 per size; “The Stove Founders in Council: Fifth Annual Meeting of the National Association of Stove Manufacturers,” *MW* 5, no. 4 (January 22, 1876): 3–5, see 4. Detroit Stove Works figures for the late 1860s and 1870s are generally much lower than that because they bought patterns from Vedder’s standard line or at auction—e.g., \$1,100 for four sets of patterns for cook, heating, and parlor

Congress appears to have listened to arguments like these, for in 1861 the law was indeed changed, partly perhaps as a response to the collapse of new patenting activity at the outbreak of war. The new law gave design patentees the option of a 3 ½-, 7-, or 14-year term, with the longer period attracting the same fee as for invention patents. There was also a simplification of the eligibility criteria to “any new *form* of an article, or any *impression or figure* upon the surface of any article or material, by whatever means or process produced.”<sup>57</sup> But the 1861 law evidently did not have the effect Howson had predicted, perhaps because the simultaneous liberalization of patents for invention made it increasingly possible to include design features alongside functional innovations in regular patent applications. As we have seen, the number of design patents did not recover, nor did their share of total stove patenting, and a sample examination of all of the 1873 stove design patents reveals that, wherever the term of a patent is recorded, it is generally the old standard of 7 years; where there is variation, it is almost always downward, to 3 ½ years.

This cannot have been because of the difference in patent fees, which was a negligible proportion of the cost (and value) of any design thought to be worth patenting. The most plausible explanation is one that points toward the post–Civil War years as marking a new stage in the stove industry’s evolution. Competition on the basis of design (including, now, both minor functional differences and variations in form, decoration, and ornament) became even more intense as the market matured, and overcapacity emerged at the end of the 1860s, a decade in which stove sales doubled. But this was the last period of similar growth and prosperity that the industry would ever know.

In this new environment, few designs could be expected to remain marketable for seven years, let alone fourteen. Three and one-half years was now the maximum period during which the cost of many new designs would have to be recovered, a reality to which Nicholas Vedder, for example, adapted by making it the normal duration of his proprietary patents. As James Bayles, editor of the *Metal Worker* and an experienced observer of the industry,

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stoves (DSW Minute Book, April 25, 1866, 9)—a much cheaper way of acquiring the ability to manufacture a line of goods quickly if one was initially prepared to sacrifice novelty and distinctiveness. Reading Stove Works costs by the early 1890s are still in the same ballpark—e.g., \$1,500 for the new “Royal Sunshine” range with three oven sizes and five different tops (RSW Minutes, vol. 1, December 8, 1892, 222).

<sup>57</sup> Quoted from Groft, *Cast with Style*, 31.



**The HANDSOMEST, NEWEST and BEST Wook Cook in the market.**

**Novelty: WITH A CAST IRON ASH PAN.**

**Five Sizes, 7-16, 7-18, 7-20, 8-20, 8-22.**

**THIS IS THE GEM OF LEADER STOVES.**

Nothing handsomer than it has ever been produced. It is of our own design and made in our pattern shop, and we claim it to be the finest appearing, most graceful and symmetrical stove manufactured. "Our Leader" fills every pledge we make for it. As to practical utility and baking qualities, it has no superior.

**Write for Prices and secure Exclusive Control in your City.**

**OUR LEADER**

**THE ORNAMENTAL AND SPECIAL FEATURES ARE:**

Rods in fire box are encased, thus preventing them from burning out. Patent oven door opener, outside oven shelf, elevated back shelf, nickel panel with tile ornament, nickel knobs, hinge pins and towel rods, double covers and double centers, cut top, swing fire door, sliding hearth plate, round edges, oven doors tin lined, cut long center with center rest.

**EVERY STOVE FULLY WARRANTED.**

**Southern Stove Works,**  
KIECHLE, BRENTANO & OBERDORFER, Proprietors  
**EVANSVILLE, IND.**

**This stove will bear critical examination, and when the price is quoted dealers will be surprised to find it so low.**

Fig. 22. Southern Stove Works, "Our Leader" stove, Evansville, IN. From *Stoves and Hardware Reporter* 16, no. 19 (May 7, 1891): 6. (Hagley Museum and Library.)

commented in 1875, "Time was when a manufacturer knew that if he made a stove he could sell it next year, if he did not this, but the trade is changing."<sup>58</sup> Eight months later, he reported that "Now a manufacturer cannot expect to use a set of patterns longer than two years, and it is often his misfortune to have to change them, and his flasks, every year."<sup>59</sup>

He had spotted the start of this "new era in the history of this great business" in his review of the 1874 season:

Novelties of all kinds have been pushed forward, old styles and patterns have been forced on the market at reduced price to make room for new goods, and the result has been a sharp competition in which the most enterprising

manufacturers have made the most sales, while the more conservative and prudent have been left with uncomfortably large stocks to carry over to next season. The first effect of this competition has been to set manufacturers to work planning how to improve and beautify their goods, and next season we may expect to see a still larger display of novelties.<sup>60</sup>

What was meant by "novelties"? This was one of those terms of the trade that everybody used but, inconveniently for the historian, nobody bothered to define. It seems to have meant new designs for stoves that were not of a very high quality and did not include significant functional improvements but, instead, were intended simply to look good—to impress buyers and to be loaded with patented features as "talking points" for salesmen to use (fig. 22). "Novelties" were meant to gleam in the

<sup>58</sup> Editorial, "The National Association of Stove Manufacturers," *MW* 3, no. 25 (June 19, 1875): 4.

<sup>59</sup> Editorial, "The Stove Manufacturers," *MW* 5, no. 4 (January 22, 1876): 6.

<sup>60</sup> Editorial, *MW* 3, no. 3 (January 16, 1875): 4.



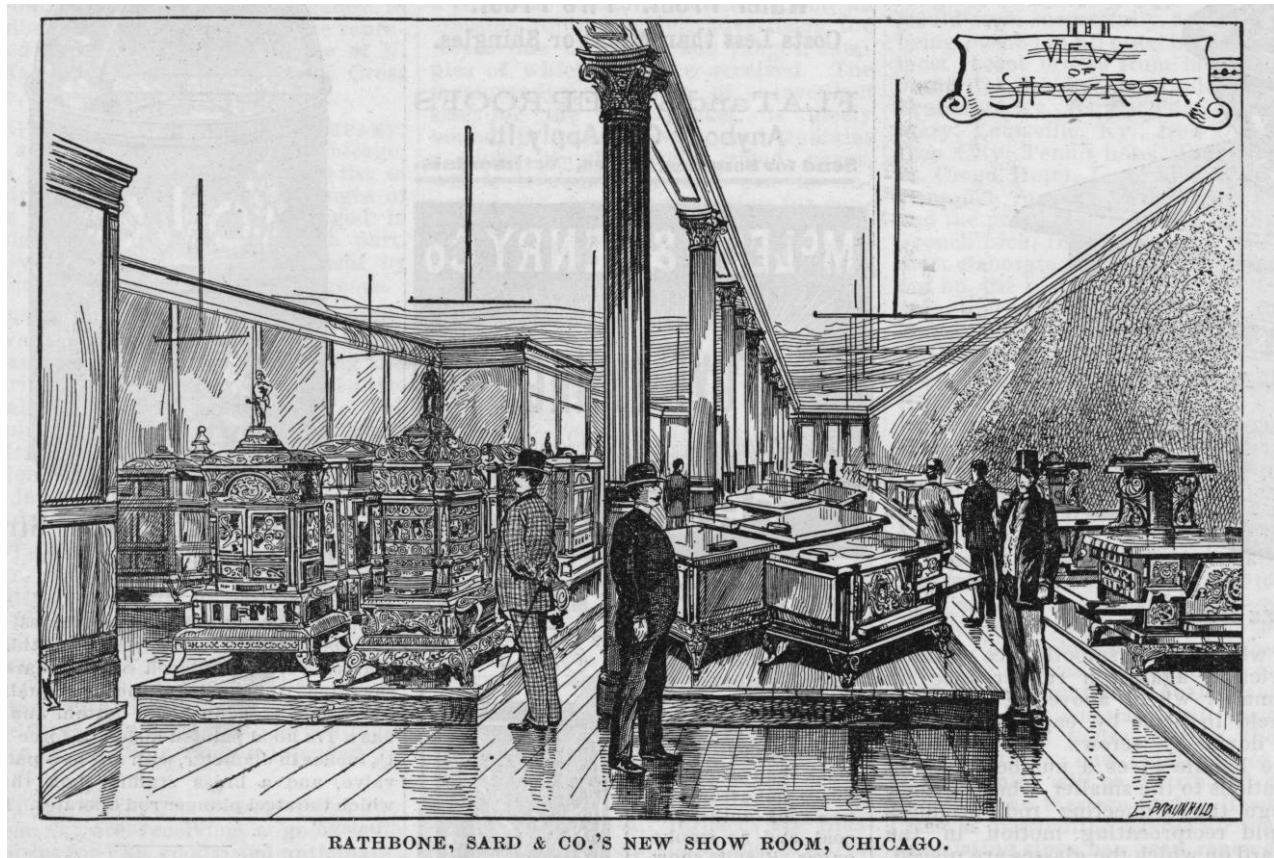


Fig. 23. "Rathbone, Sard & Co.'s New Show Room, Chicago." From *Stoves & Hardware* 10, no. 24 (June 1, 1888): 17. (Hagley Museum and Library.)

stove store, not just because of the traditional black-lead stove polish but with edges ground bright on emery wheels and ample shiny trimmings made of the new wonder metal, nickel, that was electroplated onto every suitable feature and many that were not (fig. 23).<sup>61</sup> Stoves also glowed much more when in use because a rising fraction of their surface (particularly of heating stoves but of cooking stove fireboxes, too) was made up of mica windows, rather than metal of any sort. Users could see the fire—an advantage in managing it but also enhancing their sense of warmth and comfort more than an old, black iron box ever could—and even gain enough ambient light for the stove to be able to compete against gas and kerosene lamps in this preelectric era (fig. 24).

Some conservative members of the stove trade bemoaned these tendencies in frequent expres-

sions of nostalgia for the good old days of plain, solid goods, slower stylistic change, and lower expenditure on new patterns, nickel plating, mica windows, bright ground edges, and other gewgaws that either did nothing much to improve stoves' functionality or actually harmed it. But other voices, notably that of National Association of Stove Manufacturers President Sherman Jewett, boss of Buffalo's old, established firm of Jewett and Root, celebrated these developments as "evidence of a higher order of taste," a challenge that "must be met by enterprising houses," rather than proof of "the unreasonableness of the public." Pattern Maker of Philadelphia—perhaps Garretson Smith himself?—argued in an animated debate in the *Metal Worker's* correspondence columns that "it is high time the manufacturers of stoves should make an attempt to have their goods in keeping with the progress of the nineteenth century . . . made in the manufacture of furniture, tapestry, carpets, &c., &c.; something in keeping with the furnishing of a room." A stove should be "a 'full jeweled,' frilled, artistic piece of bright furniture . . . so that we would care to have them in our parlors,

<sup>61</sup> William P. Blake, "The Metallurgy of Nickel in the United States," *Transactions of the American Institute of Mining Engineers* 11 (1883): 274–81; and William H. Wahl, "Electro-Plating with Nickel," *Journal of the Franklin Institute* 117 (1884): 124–34, 210–22, esp. 124–25, 127.

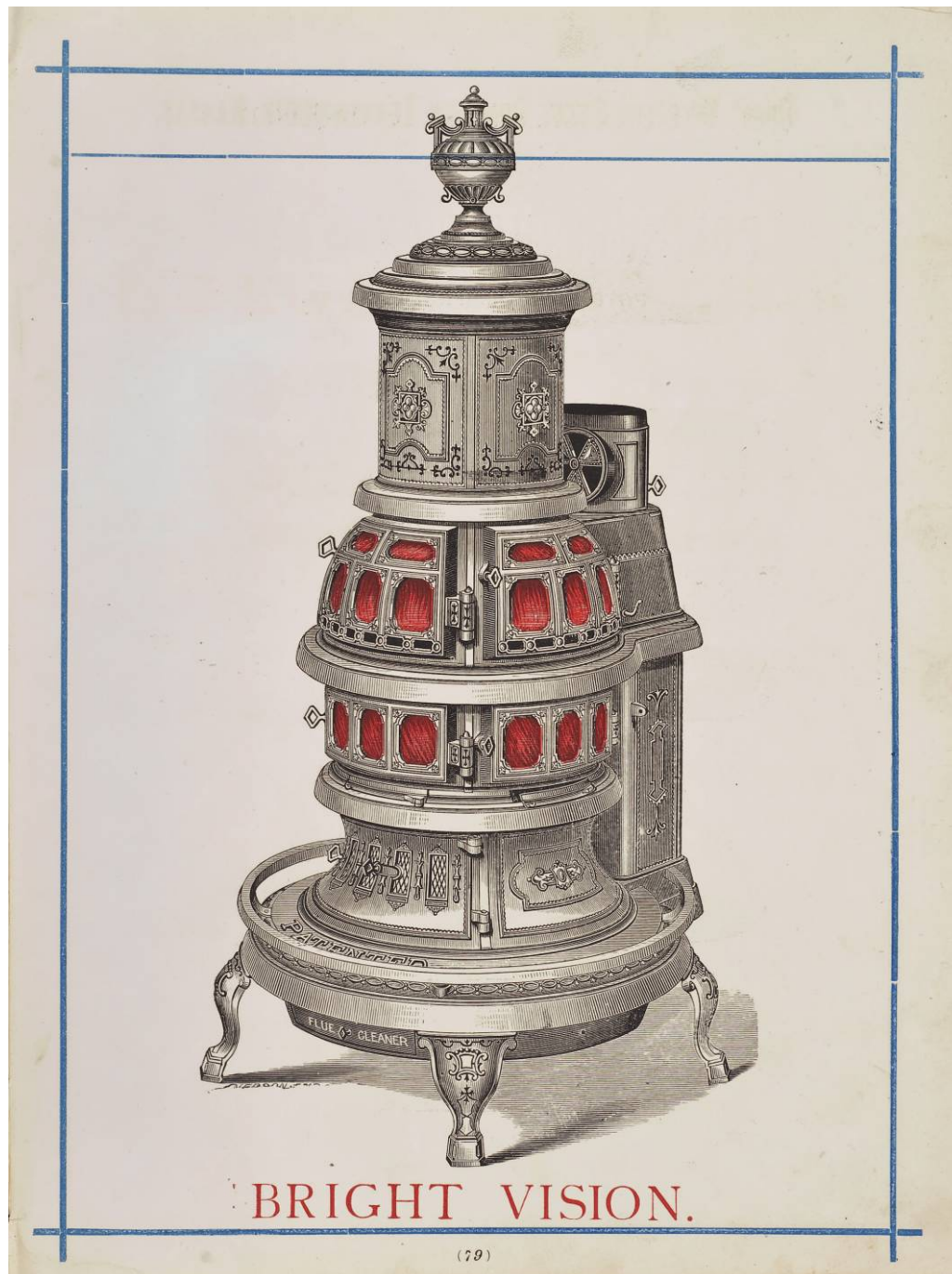


Fig. 24. "Bright Vision" base burner. From Great Western Stove Co., *Catalogue 1879* (Leavenworth, KS: J. C. Ketcheson, 1879), 79. (Printed Book and Periodical Collection, Winterthur Library.)

bright and cheerful, radiating a pleasant warmth . . . controlled by just such contrivances as dampers, checks, &c." that conservative critics condemned. "Let us hear no more about the cry to stop the novelties, because some manufacturers have not the grit, or the brains, to know what the public of this centennial year require[s]." It was time for the industry to embrace the spirit of progress and offer customers

the constant flow of new and improved products that they demanded.<sup>62</sup>

In fact, the craze for "novelties" could be traced back to the period of stiffening competition in the

<sup>62</sup> Sherman Jewett, quoted in "The Stove Founders in Council," 3; Pattern Maker [pseud.], "The Stove Trade and Its Evils," *MW* 5, no. 9 (February 26, 1876): 4–5, quotation from 5.





Fig. 25. Southard, Robertson and Co., "The 'Contest' Portable Range," New York, 1875. From *Metal Worker* 5, no. 13 (March 25, 1876): 1. (Hagley Museum and Library.)

late 1860s and shows up in the patent record as the last and highest spike of inventive activity. It was led by the industry's largest and strongest firms, exploiting the advantage that their resources gave them by responding quickly to what dealers and salesmen reported about the market's requirements. They "found the introduction of new goods for each season's trade so profitable that [by 1876] they [were] in no respect anxious to abandon it."<sup>63</sup> It gave them an initial competitive edge but was a strategy that ran into diminishing returns as the whole industry adopted it, and it became increasingly costly to maintain. It also had unforeseen consequences; for example, dealers became reluctant to place annual bulk orders or to take the risk of holding stock that might become unsalable. The development of the railroad system also meant that they no longer had to buy in boatload or carload lots—hand-to-mouth buying had become feasible as well as necessary. Nevertheless, there was no going back. As the *Metal Worker* editorialized, "They have called up a Frankenstein that will not down at their bidding. . . . Their present position is very

much like that of a man skating on thin ice. It is dangerous to go in the way they are going, but it is doubly dangerous to stop."<sup>64</sup>

The larger firms found some advantages in this risky new world. The result of manufacturers' increasing competition on "added extras" and their decorative and stylistic arms race was to speed up the rate at which stoves, inherently durable products, might be perceived by consumers as needing replacement. Manufacturers did not use the term "planned obsolescence" but only because it had not yet been invented. Styling was an increasingly conscious object of their behavior, in particular, emphasizing the model year with a bright nickel badge on the stove's most prominent face—something serving little purpose except as an advertisement of modernity one year and a mark of shame the next (fig. 25).<sup>65</sup>

Accelerated, persistent, small-scale innovation also offered manufacturers the hope of an escape

<sup>64</sup> Editorial, "The Stove Manufacturers," 6; editorial, "The Stove Trade and Its Evils," *MW* 5, no. 5 (January 29, 1876): 6.

<sup>65</sup> A Stove Jobber [pseud.] and A Dealer [pseud.], "Why Put the Date on Stoves?" *Stoves and Hardware* 9, no. 12 (December 1, 1886): 12–14.

<sup>63</sup> Editorial, "General Aspects of the Stove Founding Industry," 6.



from the vagaries of the patent system. Paradoxically, one of the reasons why the volume of patenting activity fell after 1869, even as the industry became ever more addicted to change, may have been that the near certainty of having a good idea quickly copied or stolen reduced the incentive to patent it. Rather, "precedence in the field will give the manufacturer all the advantages he could reasonably expect to derive from a patent, if he had it. By the time others are ready to follow him he will be ready to try something else."<sup>66</sup>

Stove makers might not all like this new environment, but they recognized that their only choice was to adapt to it. Frank Magee, superintendent of the great factory his father John had founded in Chelsea, Massachusetts, complained about the results in 1887: "We expend in the neighborhood of \$20,000 a year simply for the production of new designs and patterns. We must constantly be placing new designs on the market. A stove that made a success last year and sold far ahead of any other on the market is just as likely as not to be relegated to oblivion this season. The public are insatiable in their demands for something new, and of course we must study to satisfy the wants of the public."<sup>67</sup> The records of the Reading Stove Works, an industry leader (it supplied all Sears, Roebuck and Co.'s huge stove trade), demonstrate that, in the following decade, there was no letup. Whether business was good or bad, the constant stream of stylistic innovations had to be maintained to stimulate demand and respond to competition. The resulting rapidly depreciating fixed capital investment in an enormously wide model range was very considerable—amounting in 1891, for example, to \$42,000 in patterns as against \$97,000 in real estate, machinery, and fixtures, to support sales of about \$480,000. Spending on this scale had to be justified to stockholders in successive presidents' annual reports. In 1893, for example, the report claimed that "it is necessary in the stove business to spend each year for new patterns an amount of money that would seem extravagant to most business men. This expenditure is required however, in order to meet competition and to keep abreast with improvements and new ideas of the times." Even in a depressed year like 1893 the company felt forced to write off \$16,966 (60 percent) of its pattern assets and spend \$22,632 on replacements and additions—equivalent to about 40 percent of profits, but, as the president again argued, this was "strictly an outlay as

necessary to the progress and success of the company as is the expenditure made for pig iron or fuel. New goods must . . . be placed upon the market to meet the competition of other progressive and energetic houses." There was "no department of the business more important. . . . The exercise of skill, taste and ingenuity in getting up new patterns is highly necessary in order that the patterns may be fully up to the high standard set by numerous able and wide awake competitors whom we must meet in the markets we occupy." Despite the "promises from year to year that the Pattern Expense would be reduced," there was no way of doing this: "the demands of competition continue to call for constant changing and the production of new lines."<sup>68</sup>

### The Long Recessional: An Industry in Decline

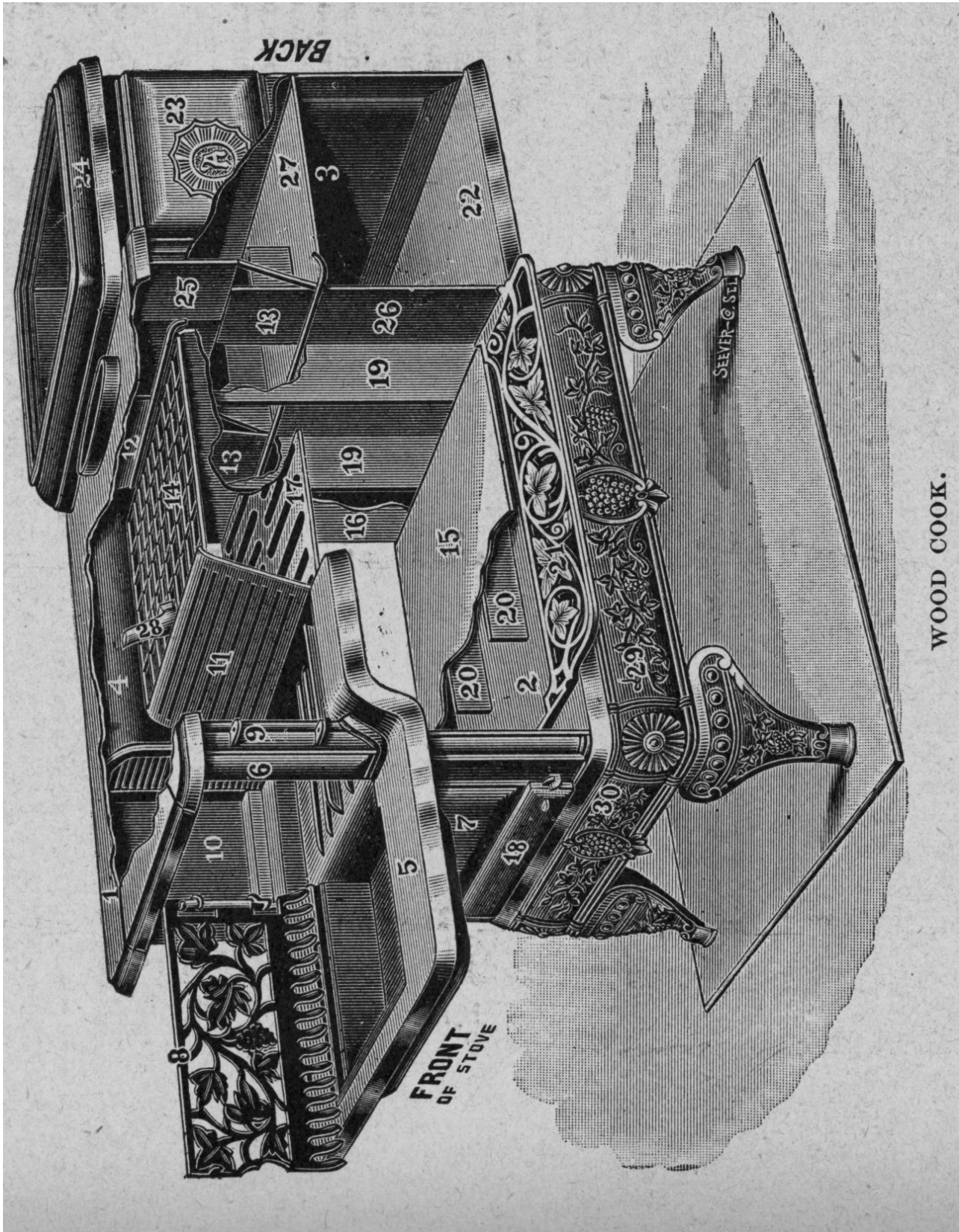
By the end of the century, the industry seemed locked into a practice of frequent and unceasing design innovation that no longer brought the benefits it may have done a generation earlier but from which there was no escape. It was producing a mature product for a stagnant market and facing increasing competition from new technologies (hot-water and steam heating) and new fuels (kerosene and both manufactured and natural gas). Even within the field of solid-fuel stoves and furnaces there was tough competition from manufacturers exploiting new materials that were increasingly cheap and easy to work, particularly heavy-gauge sheet steel, shaped on power presses and riveted up.

Stove makers' reaction to their loss of market share was usually just to carry on doing things the only way they knew or to withdraw from the business altogether. Standard operating procedures learned in the middle decades of the nineteenth century served the stove trade increasingly poorly by its end, and yet the structure, culture, and habits of the industry limited its freedom to produce an innovative response. For example, the habit of outsourcing stove design to independent pattern makers, or the conservatism and autonomy of an in-house pattern department, meant that new stove models continued to be designed from the outside in, entailing a complete replacement of patterns even for the unchanging internal working parts (fig. 26). It took a simple stroke of genius for somebody to realize at last that this was unnecessary. It was possible to

<sup>66</sup> Editorial, "Litigation in the Stove Trade," 6.

<sup>67</sup> "The Inside of a Modern Stove Foundry," 16.

<sup>68</sup> RSW Minutes: pattern account, February 19, 1891, vol. 1, 17; Presidents' Annual Reports, in RSW Minutes, February 20, 1893, vol. 1, 234; February 20, 1895, vol. 2, 156; February 20, 1896, vol. 2, 259; February 21, 1901, vol. 3, 289.



WOOD COOK.

Fig. 26. Bridge and Beach Co., wood cookstove, showing side and back of the firebox (10, 11), oven bottom (15), hot water reservoir (24), and bottom of the "hot closet" (warming oven, 22), St. Louis. From "Directions for Ordering Repairs," *Stoves & Hardware* 10, no. 2 (July 1887), 27. (Hagley Museum and Library.)



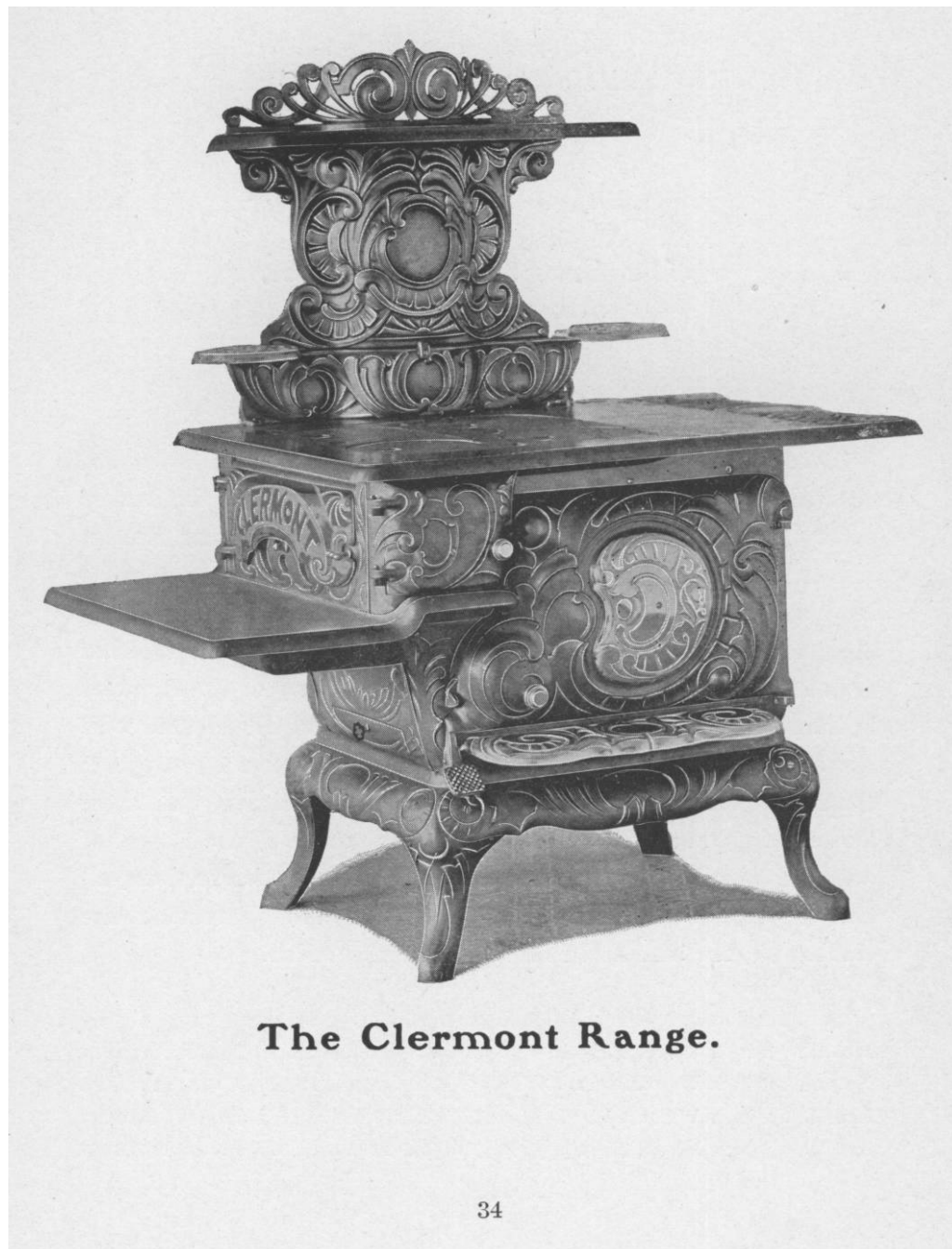


Fig. 27. "The Clermont Range." From Gem City Stove Co., *Clermont Stoves and Ranges: Illustrated Price List, No. 18* (Dayton, OH: Gem City Stove Co., 1902), 34. (Hagley Museum and Library.)

partake of some of the advantages of standardization and mass, rather than batch, production by sharing common parts and patterns across many superficially different models and fitting a new external design (the stove's "dress") around a relatively stable core. But by the time that the cost-saving innovation began to spread (the early 1910s), the demand for cast-iron, solid-fuel stoves was already declining sharply, and belated rationalization of product lines and manufac-

turing techniques could not have saved the industry, even if it had been undertaken with greater vigor.<sup>69</sup>

<sup>69</sup> Lee W. Van Cleave (Buck's Stove and Range Co., St. Louis), in "Discussion: Curtailing Pattern Expenditure," *Proceedings of the National Association of Stove Manufacturers* 39 (1910): 113–23, esp. 121–22. The discussion illustrates the industry's chronic problems, manufacturers' awareness of possible solutions, and yet the extreme difficulty of actually doing anything constructive about them.





Fig. 28. "Canopy Dawn Range." From Buckwalter Stove Co., *Catalogue No. 36* (Royersford, PA: Buckwalter Stove Co., 1902), 45. (Hagley Museum and Library.)

At the turn of the century, the cast-iron stove was still a ubiquitous and essential domestic appliance. But for all of manufacturers' efforts to renew it by continuous superficial redesign and to bolt on ever more added extras such as oven thermometers, the new must-have, it was no longer anything but an old technology expensively clad in an increasingly out-of-date fashion. The writing was on the wall, and for the domestic appliance industry it read cleanliness—smooth surfaces—a functional, labor-saving aesthetic. The stove industry's days were numbered. But its movement toward the margins of the American consumer economy would not happen quickly. And even though manufacturers' expectations for its future became increasingly pessimistic, many did their best to respond to the challenges of the early twentieth century with

one last great burst of remodeling. They abandoned the swirling, bulging, heavily carved excesses of the second rococo revival, the dominant style of the late 1890s and early 1900s, which had demanded the utmost skill from pattern makers and molders alike (fig. 27). Instead, they embraced what they thought of as modernity, simplifying stove shapes, eliminating decoration, minimizing nickel work, and eventually covering every surface, all of them now flat or just slightly rounded, with a light-colored enamel finish (figs. 28–29). Ironically, the pursuit of plainness to enable stoves to fit more easily into the post-Victorian household was the industry's last great stylistic innovation, beginning in 1902 and determining stoves' appearance through the following decades. In 1931 Leslie Dana, only son of Giles Filley's successor at Excelsior and president of what was by then the Charter Oak Stove and Range Co., renamed after its most famous product, patented his last stove, No. 1,836,578. His aim was to "provide a stove of sanitary construction and pleasing ['stream-lined'] appearance, especially designed to be finished in enamel, and easily kept clean." It would provide "maximum fire box capacity with minimum floorspace." Stoves had been born as essentially utilitarian objects in the Age of Jackson; they died the same way in the Age of Roosevelt (fig. 30).

## Conclusion

Does the story of this distinctively American industry of the long nineteenth century, once so important, now almost forgotten except by a loyal corps of collectors and enthusiasts, possess more than antiquarian interest?<sup>70</sup> Perhaps.

The stove trade was a somewhat introverted business community, made up of men who spent most of their careers within one or two companies, usually within the same locality. Their points of reference in their extensive discussions about business practices rarely included any other industries, as if they either did not know much about other enterprises whose problems were actually quite comparable to theirs or even believed that the stove trade was *sui generis*, so that other people's experience was either irrelevant or inapplicable.<sup>71</sup>

<sup>70</sup> Members of this community are doing an excellent job of preserving artifacts and publishing primary source material on the industry's history; see esp. <http://www.myantiquestove.com>.

<sup>71</sup> The principal source for these broad claims is work in progress on (1) a collective-biographical database of about 1,400 members of the National Association of Stove Manufacturers, 1873–1929, for



Fig. 29. Kalamazoo Stove and Furnace Co., catalog (Kalamazoo: Kalamazoo Stove and Furnace Co., 1926), front cover. (Printed Book and Periodical Collection, Winterthur Library.)



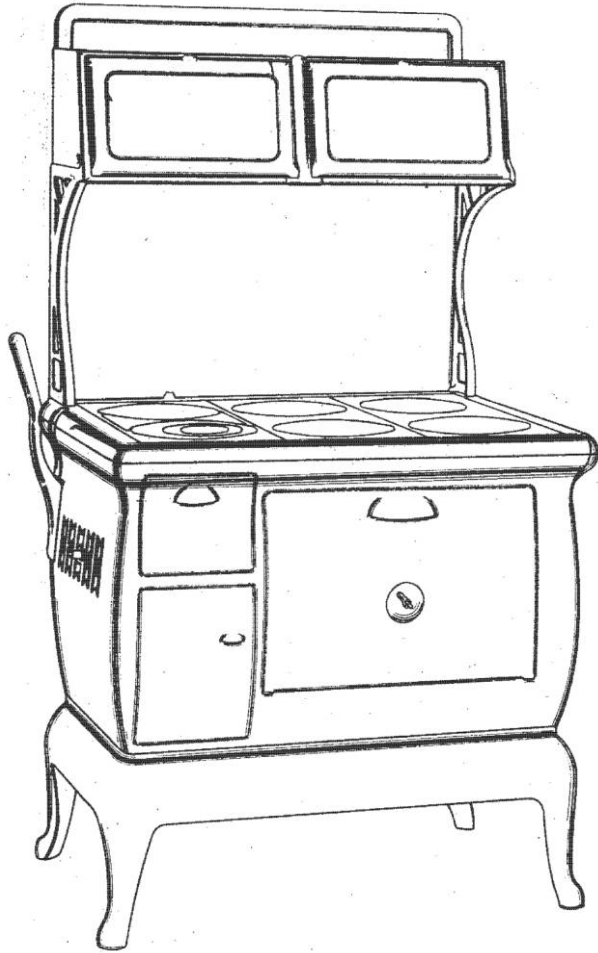


Fig. 30. Patent drawing for Leslie Dana, "Domestic Range," patent D75014, St. Louis, 1928. (U.S. Patent and Trademark Office.)

Nevertheless, stove men used two semihumorous analogies when talking about the kind of business they were in, which can help us to understand and contextualize it, too. On the one hand, a stove was like a coffin: it was for use, not enjoyment; people only bought them when they needed them, and only one at a time. But the stove trade was also like the millinery business. As Sherman Jewett advised his colleagues in 1875, "A stove superceded and out of style falls . . . flat. The stove manufacturer must, in some way, familiarize himself with the people who are to be his customers; must an-

about an eighth of whom there are quite rich obituaries, and the careers of most of the rest can be traced in outline (persistence at a single firm or job moves and relocations), and (2) the near-verbatim transcript of more than nine-tenths of the annual and semiannual conventions of the association for the same period, at which everything connected with the business was discussed repeatedly, at length, and with the utmost frankness.

ticipate their wants, and, if possible, determine the fashions."<sup>72</sup> Attractive design determined whose stoves did best in the market and how profitable a price they could command. And perhaps an emphasis on style and changing appearance could persuade buyers to trade in their stoves more quickly than technical obsolescence required.

The stove trade, manufacturing and selling the first universal consumer durable, thus combined within itself, or prefigured, aspects of the experience of many other industries. The emphasis on rampant product proliferation, attention to appearance as well as (sometimes, indeed, at the expense of) function, conformity to prevalent tastes for elaborate styles, and acute sensitivity to what the market required, together with an attempt to shape consumer taste (notably through advertising) are similar to many other nineteenth-century manufacturers of much smaller, lighter, cheaper, and less durable consumer products for the American household—notably crockery, glassware, flatware, many kinds of textiles, and some types of furniture.<sup>73</sup> The stove industry therefore was not unique. It finds its place among a constellation of nineteenth-century industries one can sum up as design-intensive, styling-dependent, and market-responsive—foundations, in fact, of an economy of mass consumption, though not necessarily of mass production.

On the other hand, the coffin analogy calls to mind the second word in the term "consumer durable." Stoves were far more costly than most individual items from the enormously wide output of the other household-products industries listed above. They were bought principally to perform vital functions (cooking, heating, warming water), rather than to look good. They needed maintenance and after-sales service from dealers. And they were not replaced very often. An element of discretion entered into the timing of purchases—in hard times, a stove's life easily could be extended—and they were rarely impulse buys. In all these respects,

<sup>72</sup> For the coffin metaphor, see Jacob Smyser (Lithgow Mfg. Co., Louisville), *Proceedings of the National Association of Stove Manufacturers* 20 (May 7, 1891): 120 (hereafter *NASM Proceedings*); Albert Parlin (Magee Furnace Co., Boston), *NASM Proceedings* 32 (May 13, 1903): 19; James W. Van Cleave (Buck's Stove and Range Co., St. Louis), "The Stove Trade," *Annals of the American Academy of Political and Social Science* 34, no. 3 (November 1909): 25–28, esp. 25. For the millinery metaphor, see A. J. Lindemann (Lindemann and Hoverson Co., Milwaukee), *NASM Proceedings* 34 (May 11, 1905): 203, and Jewett, *NASM Proceedings* 4 (June 9, 1875): 3.

<sup>73</sup> See Regina L. Blasczyk, *Imagining Consumers: Design and Innovation from Wedgwood to Corning* (Baltimore: Johns Hopkins University Press, 2000); and Philip Scranton, *Endless Novelty: Specialty Production and American Industrialization, 1865–1925* (Princeton, NJ: Princeton University Press, 1997), esp. chaps. 5–7, 10.



the nineteenth-century American stove industry was far more like later consumer-durable goods manufacturers than it was similar to its design-intensive contemporaries that also furnished the American household.

Stove makers produced what was perhaps the first consumer durable to experience all of the classic stages of the product cycle—introduction, growth, maturity, saturation, and decline. Entrepreneurs had to devise and implement appropriate strategies at each stage, notably in the areas of product design and differentiation and the adoption of an emphasis on continuous superficial innovation and stylistic change for the pursuit of competitive advantage in a market that entered its maturity shortly after the Civil War. As they faced the challenges of a declining market in the early 1900s, some stove mak-

ers in Detroit, by then long established as the industry's largest production center, began to move their capital and some manufacturing capacity (notably for patternmaking and high-quality foundry work) into a new metal consumer-durable business not too far removed from what they knew best.<sup>74</sup> Automobile and parts manufacture seemed to offer huge prospects of profits and growth but would in due course attain maturity itself and have to devise its own strategic responses, some of which would probably have struck any stove manufacturer from the 1860s onward as quite familiar.

<sup>74</sup> Donald F. Davis, *Conspicuous Production: Automobiles and Elites in Detroit, 1899–1939* (Philadelphia: Temple University Press, 1988), gives some attention to this process.